MOTOR AGE

Vol. VIII No. 18

CHICAGO, NOVEMBER 2, 1905

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\$2.00 Per Year

NEW ORLEANS MOTORIST'S PARADISE



N EW ORLEANS, La., Oct. 30—This city and the pine lands and gulf coast about it is now the center, not only of a teeming commercial life and prosperity, but also of attraction for travelers who seek warmer climes and scenes of historic and natural beauty and interest. No one element is contributing to the latter development more than the wonderful opportunities offered here for the automobilist. These opportunities have not been taken advantage of as yet to any considerable extent, as automobiling here is in its infancy. Three years ago there were just three automobiles in New Orleans. Now there are hundreds, with purchasers in sight for the immediate future that will bring the total near 1,000 very soon. In the past summer 30 miles of macadamized or asphalt pavements have been put down,

and 60 miles more is contracted for. A great connecting speedway and boulevard is proposed to connect the two immense if partially unimproved park areas of the city—City Bayou St. John, on Road to Spanish Fort park and Audubon park. Another im-

park and Audubon park. Another improved road is proposed connecting the center of the city with the old shell roads leading to the lower river coast. Yet another shell road is talked of, leading out of the city to a ferry across the Rigolets, where the British fleet forced its way against a small detachment of Americans in flatboats in 1815, and thence to the Riviera of America—the Mississippi gulf coast. An automobile club has recently been organized, with Charles U. Kennedy, the pioneer au-

tomobilist of the city, as president, and a number of the most prominent men in the city active sponsors and members.

About the city, on quaint, old-time shell roads, over ancient cobble-stoned streets, or near modern, clean-swept macadam or asphalt as the case may be—are scenes and resorts full of the interest of 200 years of stormy life. French, Spanish, Americans and English people of four generations and three great races have poured out their blood about it and have left behind scenes of interest, seldom failing in the picturesque, never failing in the element of romance and often affording the opportunity for new phases of interest, fresh features unique and singular to the section and the time. Within a radius of 8 miles from the center of the city are the United States

barracks and the battlefield of Chalmette; Spanish fort, the historic Bayou St. John road leading to it, and the view across Lake Pontchartrain; West End, the sum-





mer casino, and the shell road leading for 5 miles through the salt marshes and along the edge of the New Canal; City park, the dueling oaks, the golf links, and the miles of roadways under the great live oaks of what was once a great plantation; Audubon park, where the Cotton States' exposition in 1885 began the new life of the city, and where the modern Tulane university crowns the view of the broad expanse of this tract, whereon sugar cane was first grown in America.

Longer tours there are a-plenty-the 131-mile run through the picturesque sugar country up the Mississippi river to Baton Rouge; the 200 mile run around the lakes to the gulf coast, going through the live oak swamps of Louisiana, the pine dune country of Mississippi, and out on the 30-mile level sweep of the sand and shell clay roads of Mississippi. Nowhere else in America can the same weird, semitropical scenery, the level roads of shell and clay, through live oaks and pines, cane field and cotton fields, past old plantation homes of the ancient regime, past century-old forts of the Spanish time, past new sugar houses and humming saw mills, be seen, every one of them linked one way or another with stirring memories and

dramatic episodes in the country's life. Given evening in October, with the harvest moon in the first quarter, the wind coming in from the far-off gulf, the city just beginning to wake up from the long summer siesta, the lights and crowds in Canal street, dinner over, and the throngs of the theaters left behind for a breath of fresh air and a glimpse of scenes where sky-scrapers and electric lights may be forgotten and you have your inspiration. A car taken from the private garage, or one of those for the public that are now being established through the city, gives you the transportation. The party? Well, just the party any one who visits New Orleans or who lives there would choose to aid him in enjoying a southern autumn moonlight night with a setting of scintil-



DUELING OAKS AND TOMB IN CITY PARK, NEW ORLEANS

lant water, breeze-stirred oaks, historic tropic scenery, and flavor of romance not toon strong for twentieth century moneymaking or money-spending folk. The Bayou St. John highway to Spanish Fort is the route chosen, with a detour, making the trip a 7-mile jaunt out and 7 miles back, with time for supper overlooking Lake Pontchartrain.

First it is down into Canal street, dodging among the cars and the crowds, thence across the great thoroughfare and into the old French quarter. Seventy-five years ago a certain grand dame of the quarter was mobbed for inhuman cruelty to her slaves and was forced to flee from her home on Royal street, by carriage out to Spanish Fort, where she took a schooner

for Mobile. The tourist should follow her route, for she went what was then and is now the most picturesque way. One change should be made. Chartres street, better paved, leads from Canal down before the Cabildo and the Cathedral St. Louis. Five minutes from Canal street, and the moonlight on the century-old buildings, with their quaint Spanish architecture, comes into view. About the square before the old buildings, a tall hand-wrought iron fence encloses the palms and shrubs that soften the onetime paved surface of the old Plac d'Armes. On either side, leading toward the river, are the Pontalba buildings, once aristocratic apartments where the elite of the city had their homes-now deserted save by the poorer peoples who have monopolized the pleasantest location and the most picturesque spot in all historic old New Orleans.

Down Chartres street to Hospital street the car goes out Hospital street across Circus street to the Bayou road, out the Bayou road, to Bayou St. John. This takes the party through 3 miles of the old city, with the spaces widening at the end until old-time plantation homes occupy great squares of caks and palms. Down Bayou St. John, under half speed, past boathouses, more plantation homes, and then into the oak and cypress swamp, with the bayou on the one hand, and the fire-flystudded, salt marsh on the other. The road is shell, over 100 years old, solid with a solidity that the winter rains can never feaze. Now and then some fellowtourist dashes by, coming in from the lake. Here and there, like a ghost of the moonlight night, a lugger, with half-furled sails, drifts in toward the city, with singing Italians manning the sweeps, or lolling about the decks. Again a naphtha launch swishes past, turning the still water into a furrow of blazing phosphorescent brilliancy. Then the lake. The lights gleam from casinos and restaurants overlooking the water. Gaunt, weather-beaten oaks



SPANISH FORT, LOOKING ON LAKE PONTCHARTRAIN

stand out above the little islet where in ancient days the Spanish sentinels kept watch and ward against the buccaneers that once ventured into Lake Pontchartrain in search of plunder.

Luncheon follows, or supper, or dinner, as you may call it, with gumbo, bisque, eroakers or sheephead or flounders, or erabs or oysters, egg-cornbread, or dainty French rolls, washed down with claret or Moselle, or Rhine wine-with coffee and cigars or cigarettes afterward to the music of the water against the piers or the band across the plaza, while the moon sinks to rest out across the lake, where the Baratarians skirted the inner shore to escape the American cruisers sent to capture them. Later, the ride back to the city, through the darkening night, and the silence, with the swamp noises emphasizing the silence, strange and mysterious here within 20 minutes of a bustling, mod-

To West End is a trip like unto that just described that may be taken. Again there would be the shell road, the lake view and the rest at the further end, and the ride along the canal, with luggers and schooners and tug boats in greater number to break the monotony of the way. A morning jaunt popular with the amateurs of the city, takes in a circuit of the parks of New Orleans-down from Canal street to the old French market, where a typical New Orleans meal, or breakfast at Begue's may be had; thence to Esplanade avenue, along that thorough-fare, past miles of houses of the antebellum French period, across Bayou St. John, and out the Park road, through City park, by the Country club, and the Panama race course; around by the cemeteries. where unique and beautiful Metarie, most solemnly artistic of any similar place in the south, makes the onlooker forget death in the magic of the fine surroundings.

From City park, the way may be taken around the proposed route of the new connecting roadway. Here the improvements are lacking, but the way is not rough enough to materially interfere with the comfort of the automobilists on their pleasure-seeking trip. Through open coun-

try the way goes, where building lots are advertised for sale and homestead associations are opening up new streets and avenues for the rush of population that every modern Orleanian believes is sure to come in the immediate future. Into Carrollton avenue, once the chief thoroughfare of the county site of Jefferson parish, miles distant from New Orleans. now merely a continuation of St. Charles avenue; past the front of Tulane university and into Audubon park. Fifteen miles of good shell and gravel roadway leads through what was the first sugar plantation

in America, and what was the site of the famous Cotton States' exposition of 1885. Here is the government and the state experiment station, Horticultural hall, the Audubon oaks, and a cool and breezy safe where luncheon may be had before the 5-mile spin down St. Charles avenue to the hotels and the business center of the city, where the picturesque trip ends.

Yet another tour for an afternoon, a morning, or an entire day, extends the full length of the French quarter, down through the German market gardens, and into the old plantation district yet remaining below the city in St. Bernard

Parish. Jackson barracks, named for Old Hickory, and built just after the war of 1812 on the site of a fort that dated back to Spanish times, is a scene of interest 6 miles down the river. There P. T. Beauregard, the hero of Louisiana during the civil war, worked as a lieutenant with George B. McClellan, drawing

plans for the New Orleans custom house before either became prominent. U. S. Grant was on duty there as lieutenant in charge of the commissary department. Robert E. Lee was subaltern there just prior to the Mexican war. Gen. Miles was stationed there for a while, in the early '70s. The old brick gateway, built over 100 years ago, still holds the guard-room, and the big iron gates still swing on the hinges that gave way for Gayoso, Claiborne, Jackson, Lee, Grant. Miles and Beauregard.

Below the barracks a great railroad has purchased a vast area and is

turning old-time plantations, with stately homes and beautiful groves, into a wilderness of tracks and switches, wharves, warehouses, and factories. Before this invasion there was a government shell road from the barracks down to Chalmette. Now the railroad is building another shell road behind its reservation, and then back to the river front, and thence down to the monument and the cemetery. The river road goes on down, past other plantations, scenes full of historic interest and replete with natural beauty, to Lake Borgne canal, where dinner may be had, and the return trip begun. It's well worth the while.



TRIMS ORMOND-DAYTONA CARD

Senator Morgan Eliminates Useless Events and Makes His Feature a 2-Mile-a-Minute Race-Seventeen Contests, Fourteen of Them Championships-Five Days' Sport

New York, Oct. 27-The program for the annual Florida beach meet, which will take place on the Ormond-Daytona beach January 23-30, 1906, has been determined upon and was announced today. In making up the list of events Senator Morgan, on behalf of the Florida East Coast Automobile Association, called in as advisers men connected more or less prominently with the American Automobile Association, the National Association of Automobile Manufacturers, the Automobile Club of America and the trade and daily press. The result of their conferences is a program in which there is no discrimination against any weight or power and each class is given an equal number of events to which it is eligible. No distinctive events, however, have been provided for lightweight racing cars at present and will not be unless there be a demand for them from makers and assurance be given of a sufficient number of entries to insure adequate competition.

The theory followed in arranging the card was that the annual meet on the beach is in the strictest sense a highspeed carnival and accordingly a tournament primarily for racing cars. The experience of the past has been that entries outside of cars practically of the racing class have been insignificant in numbers and importance. It has also proved that the 5 days available for racing, limited as they are by tide conditions, permit little time for the settlement of the relative superiority at adequately varied distances of other than the racing machines and allow practically no opportunity for stock car demonstration. Then, again, last year's sad experience and futile attempt to run off a too lengthy program in the scheduled 5 days, which resulted in a lapover of two days into the following week, and other schedule miscarriages too painful to recall, demonstrated the necessity of a very considerable cutting down of the number of events. Accordingly the racing card has been shortened from thirty to seventeen competitive events, not including the record trials for all classes at 1 mile and 1 kilometer.

Of these seventeen events, fourteen are open championships, the other three being an American car championship, a price handicap for American stock cars and an open handicap. Four classes of racing cars are recognized by the programmiddle weight gasoline, heavy weight gasoline, middle weight steam and heavy weight steam. Each gasoline class has two exclusive championships, a weight championship open also to steam and five freefor-all championships, to which it is eligible. There are two championships for steam vehicles irrespective of weight, a weight championship open also to gasoline, and five free-for-all championships. To these competitions are to be added the class record trials at 1 kilometer and 1 mile. Thus summarized the program in detail for the southern affair follows: One-mile middleweight championship, gaso-

One-mile heavyweight championship, gaso-

One-mile championship, steam.
One-mile world's championship free-for-all for Dewar cup.
One-kilometer record trials for each weight

One-kilometer record trials for each weight and power class.

One-mile record trials for each weight and power class.

Two-mile-a-minute record free-for-all. The winner must equal or exceed 120 miles an

Five-mile middleweight championship, gaso-

line.
Five-mile heavyweight championship, gaso-

Five-mile heavyweight championship, gasoline.
Five-mile championship, steam.
Five-mile free-for-all championship.
Ten-mile middleweight championship, all powers.
Ten-mile heavyweight championship, all

powers.
Ten-mile free-for-all championship.
Ten-mile handicap, open to contestants who start in previous events.
Fifteen-mile free-for-all championship.
Fifteen-mile price handicap for American touring cars fully equipped.
Thirty-mile free-for-all championship for American-built cars.
One-hundred-mile free-for-all championship.

The question of the admission of socalled freak racing machines, which the foreigners assert is largely responsible for their failure to enter more generally inthe annual straightaway tournament, was easily and logically answered by the announcement that the definition of a legitimate motor car adopted by the A. A. A., under whose rules the races will be run, would be followed as fixing the standard of eligibility. The rule in question, which is clause 19 of the A. A. A. racing rules, is as follows:

An antomobile, motor car, or car within the meaning of these rules, is a four-wheeled track or road vehicle propelled by self-contained mechanical means, and provided with suitable brakes, a differential gear or its equivalent, and a reverse gear.

Under the rules the weight classification, which follows the international classification, is as follows: Lightweight, 551 pounds to 881 pounds; middleweight, 882 pounds to 1,432 pounds; and heavyweight, 1,433 pounds to 2,204 pounds.

Each car will be confined to its own weight class in all events classified by weight in accordance with a ruling of the A. A. A. racing board made on May 4, 1905, which decided "that cars be limited strictly to their own weight classes, since all cars are eligible in free-for-alls." This means the middleweight cars cannot compete in heavyweight classes, nor is any car over 2,204 pounds weight eligible in any class.

So much for eligibility. It would seem that the limiting of cars to the international weight standard and to the form of construction outlined in the A. A. A. rule on the question was a reasonable and sufficient answer to the freak complaints at former meets and would hold down the competitors to as reasonable and logical a restriction as is possible in a competition of cars which are essentially speed machines built for the world's greatest speed tournament.

A new event-the 2-mile-a-minute freefor-all record trial-is the creation of Morgan's inventive genius. It is a veritable inspiration and an idea calculated to keep the Ormond-Daytona meet abreast of the speed advancement of the automobile. A mile a minute now belongs to the remote past and is only fit for a stock car stand-

In 1905 W. K. Vanderbilt, Jr.'s, mile of the year before on the Florida course was cut by Arthur MacDonald from 39 to 34% seconds, not to take into consideration the 32% seconds by Henry L. Bowden in his overweight, double engine freak. Cars far faster than these have since been built and are building, which will be on hand next January for a further assault on the figure that is emblazoned on the front of the clubhouse at Daytona, and are sure to bring the record below the half minute. In view of this Morgan conceived the 2-mile-a-minute race. It will be run in a series of time trials. The time specified must be made to entitle the victor to the novel trophy and ceremonial of conquest the senator has in mind. In the event of its attainment by more than one competitor the prize will of course go to the one who makes the biggest cut under the 120mile-an-hour rate.

The prize list will be exceptional in character and will contain many trophies of great value. Undoubtedly the Minneapolis cup, donated by the Minneapolis Automobile Club, of which Asa Paine, the new president of the F. E. C. A. A., is a member, is probably the most magnificent. Motor racing enthusiasts who, as last year, may desire to be represented in the Florida prize list, can communicate with the management. Such prizes will be allotted to the championship races scheduled above.

In order to be eligible for the time trials cars will be required to compete in the regular competitive events in which they are entered. No car will be accepted for the touring car event unless fully described in the catalogue of the maker issued not later than 30 days before the closing of entries. All contestants will be subject to weight examination before and after competing.

The entrance fee for each event is \$20, with the exception of the Dewar trophy contest, which is fixed by its deed of gift at \$50. In some of the events it is probable that the heats will be arranged according to the nationality of the cars. Applications for entry blanks should be addressed to W. J. Morgan, 116 Nassau street, New York city, and from the same source any additional information may be

THOMAS PLANS PARIS TRIP

Buffalo, N. Y., Oct. 30-E. R. Thomas, maker of the Thomas Flyer, is completing arrangements for an excursion to the French automobile salon, which opens at Paris December 8. Reduced rates have been secured from steamship companies, railroads and Paris hotels, and altogether it is estimated that the cost of the trip will not exceed \$225. A general invita-tion has been extended by Mr. Thomas to all those who propose to buy automobiles during the coming year and to those who are interested in any way in the trade of automobiles in general. Arrangements are now being completed for incidental trips to a number of the plants in France.

CADILLAC IN MERGER

Detroit Automobile-making Concern Consolidates with Leland & Faulconer Mfg. Co.

Detroit, Mich., Oct. 30-Announcement is made of the consolidation of the Cadillac Automobile Co. with the Leland & Faulconer Mfg. Co. under the tentative name of the Cadillac Motor Car Co., with a capital stock of \$1,500,000. The objects are to manufacture, buy and sell ears, carriages, wagons, boats and vehieles of all kinds. None of the capital stock is paid in cash. The total net assets of the Cadillac Automobile Co. are given as \$1,000,000, of which \$200,000 is business and good-will. Buildings and land at Cass and Amsterdam avenues are valued at \$418,118.26; cash, \$39,416.81; merchandise-finished product and raw material-\$358,733.21; machinery, tools, patterns, models, fixtures, supplies, etc., making up the total. The Leland & Faulconer Mfg. Co. put in: Cash, \$123,-249.34; outstanding accounts, \$40,349.87; machinery and foundry equipment, \$104,-059.34; merchandise and supplies, \$93,866.-15; business and good will, \$75,000, with indebtedness \$31,000, making the total net assets \$500,000. The two concerns have been very closely allied in the past, the Leland & Faulconer company making the engines and other parts for the Cadillac company. The stock has been to a great extent in the same hands, and a corelation has existed among the officers of the two concerns.

"The business of both concerns has shown a remarkable growth," says Henry M. Leland. "While the original companies were organized with a capital stock of \$300,000 and \$175,000 respectively, I can say that every dollar of the present capitalization is represented by something tangible. The Cadillac Automobile Co. did a larger business last year than any other automobile company in the world, its output being 4,000 machines. We do not believe in declaring dividends before they are made or counting our chickens before they are hatched: but we think we are safe in expecting a still larger business next year."

In filing articles of association, Messrs. Black, Bowen and Leland acted as trustees for ten stockholders, the others being: A. E. F. White, William H. Murphy, William E. Metzger, Wilfred C. Leland, Everett Leonard, Harry Pettee and A. C. Leonard, all of this city.

At a meeting at the Cadillac Automobile Co.'s office, Lem W. Bowen, A. E. F. White, Clarence A. Black, William H. Murphy, Henry M. Leland, William E. Metzger and Wilfred C. Leland were elected directors.

MILLIONS FOR GOOD ROADS

New York, Oct. 29—A constitutional amendment providing for the expenditure of \$50,000,000 in New York state for the improvement of the highway is to be voted upon at the election next week. A. R. Shattuck, chairman of the good roads committee of the A. C. A., has sent out a

circular letter to all New York motorists urging that they vote and work for the

passage of the amendment. Mr. Shattuck, who has labored enthusiastically for better highways, points to the fact that if the amendment is carried New York state will spend \$50,000,000 on good roads in the next 10 years, the expense of which under the bond issue will be divided into 50 per cent on the state, 35 per cent on the county and 15 per cent on the town in the form of annual tax levies of \$400 for each mile, being the interest at 5 per cent on the bond issued for a mile of roadway costing \$8,000. At the request of the executive committee of the supervisors' highway convention Mr. Shattuck requests motorists to contribute \$10 each to carry on this campaign. The money can be sent to him in care of the Automobile Club of America. Most important of all, Mr. Shattuck wishes motorists to vote for the amendment on election day and to make a canvass among their friends with this object in view. By state aid New York has built and has under contract 700 miles of state roads and has appropriated, all told, \$3,223,265, but the state finances are such that this year it could appropriate only \$100,000. In 1903 a constitutional amendment was passed by the legislature permitting the state to bond itself for \$5,000,000 a year for 10 years. This amendment, as required by law, was passed again by the legislature in 1905, and will be submitted to the vote of the people at the next election, on November 7. If the amendment is carried by the popular vote the state will build between 600 and 700 miles of state roads a year, and in 10 years, instead of its roads being a disgrace to civilization, as at present, New York will have 7,000 miles of fine roadway connecting the principal cities of the state,

FORTUNE IN NEW YORK'S ROW

sal throughout the state.

which will make motoring almost univer-

New York, Oct. 30-The expenditure of millions of dollars is under way already or planned in the immediate future for garages along New York's new automobile row, which will extend along Broadway for a mile from Forty-fifth to Sixtyfourth street and include locations on the side streets near to or adjoining the main thoroughfare. Already, in addition to the great garage just completed by Smith & Mabley, the Pope, Winton, Thomas and Packard cars are housed in spacious and elegant headquarters. The Ford Motor Co. is remodeling a big Broadway stable and E. B. Gallaher, agent for the Richard-Brasier and Cleveland, another one on Fifty-eighth street just west of Broadway for garage purposes. The new half-million-dollar A. C. A. club house on Fiftyfourth street will have an enormous garage for members. The Auto Import Co. garage at Broadway and Fifty-seventh street, which has been leased by the American Locomotive Co., and the garage building for the Lozier branch at Broadway and Fifty-fifth street will both be occupied by show time. Adjoining the Smith & Mabley plant on the corner of Fiftysixth street is another building for rent for a garage. Of the proposed new Thomas garage at Sixty-third street and Broadway MOTOR AGE told last week:

KEEP TAB ON AMERICA

Britons Watch Vanderbilt Race Results and Are Not Alarmed By United States' Showing

London, Oct. 21-The Vanderbilt cup race, while not evoking any particular enthusiasm on this side, was keenly watched by British motor manufacturers in order to learn how far American build-ers have progressed. They profess to be satisfied that American development and progress has been only what was to be expected from increased experience and does not at the moment, disclose any potentialities such as would warrant any international trade developments from your side. Lancia is very sincerely sympathized with on his renewed ill luck, but his performance simply goes to show that the 1905 Bennett form was of a very high racing order, as a reference to his driving in comparison with that of Thery, Caillon and others will indicate. The protests of Hemery and Heath, which were later withdrawn, are not regarded as a very sportsmanlike proceeding, but the least we say on that subject the better, for our international contests on this side have not been distinguished by sportsmanship. It is expected that the protests were based on the supposition that Darracq's tires were English-made Dunlops and that the Darracq radiator was made by Megerisy of Geneva, who supplies quite a large proportion of the French trade with the honeycomb form of radiator, just as Lemoine supplies Germany and England with axles. But the Dun-lop tires used by Hemery were made in France by the French branch of the Dunlop company—the high import duty necessitates that-and the writer is told by the Darracq representative here that the radiator is one specially constructed in France to meet the Bennett regulations. But the protest against Heath's Panhard puzzles and amuses, for it is well known that nothing not French is incorporated in any Panhard sold in France-not to speak of an international racing car, subject to such conditions as control the Vanderbilt race.

CLOSES DE DIETRICH BRANCH

New York, Oct. 30-"De Dietrich, American Branch," is no more. Baron Adrien de Turckheim, on his visit to this country for the Vanderbilt cup race, decided to close the branch. The American de Dietrich agency has been taken by a syndicate headed by Walter Allen, of the former firm of Allen, Hall & Co., which last year imported the Mercedes cars. Incidental to the breaking up of the branch there was a receiver's auction sale, at which fifteen cars and a motor boat were sold at figures so great as bargains as to be the talk of the town. The aggregate was \$38,000. Mr. Allen secured the 90horsepower racer which won the Vanderbilt 100-mile race at Ormond and scored world's records in Cuba and was driven by Gabriel in last year's race on Long Island for \$1,950. The Pullman car, for which \$16,000 was asked last year by the de Dietrich people sold for \$3,500.

NEW YORK ECONOMY TEST IN FULL SWING



ON THE ROAD TO THE MANHATTANVILLE FERRY-FROM STATEN ISLAND TO THE JERSEY SHORE

PHILADELPHIA, Pa., Oct. 30—Eight of the nine cars which started from the Smith & Mabley garage at Broadway and Fifty-sixth street, New York, between 8:38 and 9:07 o'clock this morning, on the economy test of the New York Motor Club, completed the run of 102 miles to this city in good shape and time this afternoon. The only car to fall by the wayside was a Compound, No. 5, which stripped the tooth of a gear and was forced to drop out at New Brunswick.

At the present writing there are but few results to state from an economical standpoint beyond the statement that the mechanical repairs were trifling in the aggregate; in fact, but a few pennies over \$2 for the entire octet. Of actual gasoline consumption nothing can be told until the tanks are filled tomorrow morning and the figures are given out at the meeting of the officials on the arrival of the cars in New York tomorrow evening. There were gasoline charges against three cars, which took on fuel en route by way of precaution; but as this will count in their favor when tomorrow's tank filling comes their averages suffer but temporarily.

There was no attempt whatever today at speeding, all being satisfied to keep well within legal limits. Besides, there were three ferries crossed and the catching of the hour-apart boats at Tottenville was largely a matter of luck. Still, to satisfy curiosity, the elapsed time of the cars, including the three ferriages, is quoted in the following details of the contesting cars.

No. 1—Frayer-Miller, 24-horsepower, side entrance tonneau, entered by Oscar Lear Auto Co., Columbus, O.; price, \$2,500; Continental tires; five passengers; Lee Frayer, driver. Elapsed time, 8 hours 39 minutes.

No. 2—Marmon, 20-horsepower, side entrance tonneau, entered by A. E. Schultz, New York; price, \$2,500; Diamond tires; four passengers; Conrad Sargenson, driver. Elapsed time, 8 hours 20 minutes.

No. 3—Reo, 16-horsepower wagonette, entered by R. M. Owen, New York; price, \$1,600; Diamond tires; ten passengers; R. L. Lockwood, driver. Elapsed time, 10 hours 2 minutes.

No. 4—Reo, 8-horsepower runabout with folding detachable rear seat, entered by

R. M. Owen, New York; price, \$675; Diamond tires; four passengers; C. C. Singer, driver. Elapsed time, 9 hours 53 minutes.

No. 5—Compound, 12-15-horsepower, side entrance detachable tonneau, entered by E. V. Co., Middletown, Conn.; price, \$1,450 with lamps; Hartford tires; five passengers; D. F. Graham, driver. Stripped gears at New Brunswick.

No. 6—Compound, 12-15-horsepower, side entrance detachable tonneau, entered by E. V. Co., Middletown, Conn.; price, \$1,450 with lamps; Diamond tires; five passengers; F. C. Carter, driver. Elapsed time, 8 hours 41 minutes.

No. 7—Compound, 12-15-horsepower, side entrance detachable tonneau, entered by E. V. Co., Middletown, Conn.; price, \$1,450 with lamps; Goodrich tires; four passengers; C. P. Hatch, driver. Elapsed time, 8 hours 54 minutes.

No. 8—Olds, 8-horsepower curve dash runabout, dos-a-dos, entered by Oldsmobile Co., of New York; price, \$670; Diamond tires; four passengers; Freeman Monroe, driver. Elapsed time, 8 hours 32 minutes.

No. 9—Wayne, 20-horsepower, side entrance tonneau, entered by Wayne Automobile Co., Detroit, Mich.; price, \$1,250; Fisk tires; five passengers; A. L. Kull, driver. Elapsed time, 7 hours 50 minutes.

The tentative record of the cars given out tonight is quoted below, though the figures mean little beyond showing the charges for mechanical repairs. The aver-

ages will all be raised by the gasoline charges, though those who took on fuel on the road will have the advantage. The record is as follows:

No. 1 — Frayer - Miller. Ferries, \$1.68; average per passenger, 33.6 cents.

No. 2 — Marmon. Mechanical repairs, 18% cents; ferries, \$1.55; total, \$1.73%; average, 43.4 cents.

No. 3—Reo wagonette. Gasoline, 63% cents; mechanical repairs, 93% cents; ferries, \$2.86; total, \$.48½; average, 44.9 cents.

No. 4—Reo runabout. Gasoline, 25 cents; ferries, \$1.55; total, \$1.80; aver-

age expense for the day, 45 cents. No. 6—Compound. Oil, 5 cents; mechanical repairs, 37½ cents; ferries, \$1.70; total, \$2.12½; average, 42.5 cents.

No. 7—Compound. Tire repairs, 561/4 cents; ferries, \$1.55; total, \$1.55.

No. 8—Olds. Gasoline, 98% cents; mechanical repairs, 18% cents; ferries, \$1.60; total. \$2.72%; average, 68.1 cents.

total, \$2.72½; average, 68.1 cents.

No. 9—Wayne. Oil, 60 cents; mechanical repairs, 37½ cents; ferries, \$1.68; total, \$2.62½; average, 52.5 cents.

Again be it understood the above report for the first day's run will be entirely amended by tomorrow's official report of gasoline consumption.

The section of the rules under which the above charges are made is as follows:

above charges are made is as follows:

37. Observers shall report charges as follows: Hotel and general expenses, no charge; gasoline, 25 cents per gallon; lubricants, 60 cents per gallon; time of engine or general repairs, 60 cents per hour; time of tire repairs, 50 cents per hour; charges to be assessed in respect to any occupant of the car who assists or any repairman on route; punctures of inner tubes, 75 cents each; punctures of shoes, no charge; blowouts of shoes, no charge; blowouts of shoes, no charge; cents each; blowouts of shoes, no charge; cents each; blowouts of shoes, no charge; chain repairs, 50 cents per hour and catalogue price of new links; all moneys paid for any purpose, such as legal fines, bridge tolls, ferry charges and necessary fees of all description.

A balmy Indian summer day was youch-

A balmy Indian summer day was vouchsafed by the clerk of the weather for the run. The route was by ferry to St. George, a fine highway across to Staten Island. Splendid roads, except a bad bit



NEW REO BUS IN THE ECONOMY TEST

of cobblestones toward the end to Camden, and ferry to the Quaker City-102 miles of road in all.

Each car carried a merry complement of passengers, out for fun. Unofficial observers on the front seat and the placards on the vehicles gave the only indication that the test was more than a mere pleasure jaunt. All hands entered into the joy of the day and trip, took things easily and did not stint the time set apart for lunch. There were four women on the run. Two of them were in the jolly party of ten Ray Owen had out in the Reo wagonette. The performance of this car was watched with interest, as it was its trial trip and the first official demonstration of a longdistance passenger bus. No attempt was made to force it. It bowled along easily at 15 miles an hour and took all the hills without trouble. A lost master link cost it 25 minutes. This was its only delay.

The cars are housed for the night in the White garage on North Broad street. The tourists are making merry at the Walton tonight, but will make an early start on

the return trip tomorrow.

Three official cars, a White, a Franklin and a Maxwell, manned respectively by E. T. Fitch, the referee; F. Ed Spooner and Nathan Lazarnick, of photographic fame, accompanied the run. The details of the test were well worked and carried out. The main officials in charge were: E. T. Fitch, referee; W. J. P. Moore, chairman of the contest committee; and A. B. Tucker, secretary and general manager.

It is certain that the railroad will be beaten by the motor cars by more than one-half. The only mishap of the day befell W. H. Harrison, of the New York Tribune, who was thrown out of the Oldsmobile as it rounded a corner at New Brunswick at high speed. Harrison was standing on the dos-a-dos platform as the turn was made. He was cut on the head and hands and otherwise bruised enough to compel his return to New York tonight, though he pluckily insisted on completing the run to Philadelphia.

SECOND DAY'S TEST

New York, Oct. 31-Special telegram-The eight cars which were survivors at Philadelphia also completed the second day's run and will start for Albany tomorrow morning. The Graham Compound was still missing, and thereby hangs a tale of heroic perseverance. It stripped a gear at 1:18 o'clock yesterday afternoon at New Brunswick. Graham had no idea of quitting, so wired the Middletown factory to ship a new transmission to New York. It was met at the Grand Central depot and hurried by automobile to the Pennsylvania depot, and thence by train to New Brunswick. By 9 o'clock the car was ready for a fresh start for Philadelphia. Trenton was made all right, but 12 miles east of Burlington the car ran into a ditch in the darkness and was wrecked. At 2 o'clock a belated trolley car came up and was boarded for Burlington, where the night was passed. Bright and early in the morning the heroic crew returned to the wreck, leaving the observer behind them, to be phoned for later. It was the intention of the relief party to get the car back to New York, repair it and make still another start in the test. Up to 10

o'clock tonight no word had been received from the wrecking crew.

Despite three ferries to be crossed, the finish of the first six cars was phenomenally close and as follows in elapsed time: No. 6 in 8:18, No. 4 in 8:19, No. 9 in 8:22, No. 2 in 8:23, No. 3 in 8:24, No. 1 in 8:31, No. 8 in 9:33 and No. 7 in 10:49.

Owing to the tanks not being filled until the following morning, only the gasoline record of the day before is available. It is now possible to correct the imperfect results of Monday, sent Motor Age last night. The following is the record of all of the survivors except No. 1, of which later.

No. 2—Gasoline, \$2; oil, 20 cents; total fuel, \$2.20; average, 54 cents; total all expenses, \$4.96; average, \$1.24.

No. 3—Gasoline, \$2.18%; oil, 25 cents; total fuel, \$2.43%; average, 24 7-10 cents; total expenses, \$5.58; average, 55 8-10 cents.

No. 4—Gasoline, \$1; oil, 7½ cents; total fuel, \$1.07½; average, 26 9-10 cents; total expenses, \$2.62½; average, 65 6-10 cents.

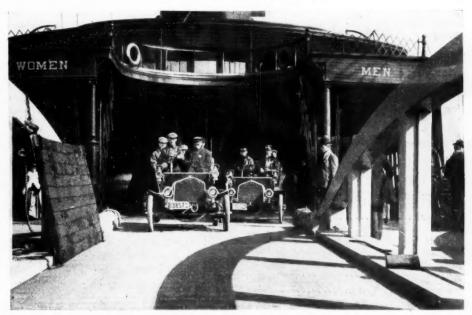
No. 6-Gasoline, \$1.50; oil, 85 cents; to-

This has been deducted in the above record by the officials in charge.

Of today's expenses the only figures attainable for reasons already stated are those for ferry charges and mechanical and tire repairs. The Marmon was charged with 18% cents for mechanical and \$1.12½ for tire repairs. Compound No. 7 had to put in a new shoe at a cost of \$28.50.

The star performance of the day was the run of the 16-horsepower Reo wagonette with ten passengers, weighing 1,500 pounds in all, from Trenton to Perth Amboy, a distance of 43½ miles without a stop, in 2 hours 10 minutes, an average of 20 miles an hour. The 8-horsepower Reo runabout accompanied it on the run and scored the same time.

The only mishap of today's run was the collision of the Wayne with some sewer piping in avoiding a collision with a four-mule team, whereby two spokes of a rear wheel were broken. The car succeeded in completing the run with its crippled wheels. Referee Fitch ruled that a new wheel could be supplied without any penalty to the Wayne on the ground that it



ECONOMY TEST CARS LEAVING THE FERRY AT STATEN ISLAND

tal fuel, \$2.35; average, 45 7-10 cents; total expenses, $\$4.42\frac{1}{2}$; average, 88 1-10 cents.

No. 7—Gasoline, \$1.53; oil, \$1.07; total fuel, \$2.60; average, 65 cents; total expenses, \$5.20; average, \$1.17 8-10.

No. 8—Gasoline, \$1.65%; oil, 3% cents; total fuel, \$1.69; average, 42 2-10 cents; total expenses, \$4.38; average, \$1.09 2-10.

No. 9—Gasoline, \$2; oil, 60 cents; total fuel, \$2.60; average, 52 4-10 cents; total expense, \$4.52\frac{1}{2}; average, 70 5-10 cents.

No. 1, the Frayer-Miller, did not require any further supply of gasoline or oil for its tanks, and no record can be had of its fuel consumption until a filling is asked. It will be seen by the above report that of the cars recorded the Reo runabout and wagonette are far ahead of their rivals in average cost of fuel and total expenses per passenger. Through an error in the figures given out yesterday 65 cents was wrongly charged against the wagonette.

was an unavoidable accident. Tomorrow's run goes to Albany by way of Yonkers, Tarrytown, Poughkeepsie, Hudson and Greenbush, returning by the same route. Then the cars journey to Southampton by way of East Thirty-fourth street ferry, Jamaica, Valley Stream, Rockville Center, Freeport, Massapequa, returning by way of North Shore. In this test great stress is laid on rule 44 which compels drivers to pay heed to the rules of the road. So far no one has violated any of these, everyone being content to follow a sane pace. The rule in question says: "Drivers mut be familiar with the rules of the road, and the current automobile laws of the states of New Jersey, New York and Pennsylvania. Each must be familiar with the speed limit regulations. Fines after arrest for breaking speel limit regulations shall be charged against the car. The act of fining is considered to establish blame on the part of the driver so far as this test is concerned."



THE AUTOMOBILE AND ACCIDENTS

It is for the past several years to keep a fairly accurate record of the accidents which occur upon city streets, charging each particular class of vehicles with the accidents for which it is responsible. The published reports for the past few years in this country and the past decade or so abroad fail by far to give to the motorphobist the least particle of consolation; in fact, the motor car can now be classed as a safe vehicle, all things considered.

The most accurate figures come from London, where vans, hackney carriages and the like are licensed and numbered the same as are motor cars. In the past 9 months ending with September the number of accidents charged to means of transportation other than motor cars operating on the city's streets was enormous, as the figures recently published show:

Tram cars— Accl dents July, Aug., Sept., 1905 250 Six months previous 459		Killed 39 84
Total 709	341	123
Horse-drawn vehicles— July, Aug., Sept., 1905 1,101 Three yrs. 1 mo. previous.11,753	$\substack{\textbf{467} \\ 8,205}$	$102 \\ 1,152$
* Total12,854	8,672	1,254

The showing for the 9 years from 1896 to 1904, inclusive, was even worse for the horse-drawn vehicles:

With the number of automobiles constantly on the increase it is not strange that there should have been some change in proportion, for the use of horse-drawn vehicles fell off somewhat during the past 4 years, while the number of automobiles found to be in use on the streets increased largely:

As a matter of fact, however, these figures are not of as much value as others, for the number of horse-drawn vehicles is not accurately known, except so far as public conveyances are concerned. Even here the automobile makes a remarkable showing and puts to shame the twaddle pumped into the public by the anti-motoring press. The figures following are for the year 1904. That year there were in London 11,057 hackney carriages for hire, and these were responsible for 1,286 personal injury accidents, an average of one accident to every nine hackneys. During the same time there were registered 8,380 automobiles, which were held responsible for 557 personal injury accidents, or an average of but one accident to each fifteen automobiles. In Birmingham during 1904 there were fifty-four accidents chargeable to automobiles and 746 accidents chargeable to horse-drawn vehicles.

Now comes Chicago, the hotbed of strikes, motorphobia, yellow press and other unpleasant things. The published reports are by no means comforting to the motorphobists. For the purpose of placing the motor car in as unenviable a light as possible the classification relating to horsedrawn vehicles has been split up to make it appear that the automobile has done its share of destruction. As a matter of fact, however, the automobile was responsible for only 158 accidents of all sorts during 1904, and only one person was killed. On the other hand, horsedrawn vehicles were responsible for 621 accidents, and in this number is included thirty-seven deaths. Still worse is the work of destruction of the street cars, which caused eighty-nine deaths and a total of 2,014 accidents. The full table follows:

 Killed
 Injured
 Total

 Horse-drawn vehicles
 37
 584
 621

 Bicycles
 1
 24
 25

 Street cars
 89
 1,925
 2,014

 Motor cars
 1
 73
 74

In the name of all that is decent, all that is reasonable, can any municipal officer of any community grin with satisfaction at his warfare on automobiles and automobilists when perusing these figures?

The French people have been through this mill; they have fought it all out, and the authorities there can give the American officials so much advice on how to handle street traffic that the American could not help feeling that he had a good deal to learn. In Paris speed laws are practically unknown; but the individual is held responsible for any damage he does, as young Eliot F. Shepard, an American, found when he was sentenced to pay a heavy fine and spend several months in jail as a result of killing a person. As a correspondent of Motor Age points out, no speed laws will prevent accidents. To quote from his letter:

quote from his letter:

A safe driver needs no law; a reckless driver defies every limit. A man may run his motor car at 40 miles an hour and yet be careful and safe; again, he may be lnexcusably careless, even reckless, at a speed of not more than 3 miles an hour. It is all a question of care, of place and of circumstances, and not a question of speed limit. Take away the fun-loving fiends, abolish the technical, definite speed limit, and make every operator of an automobile and every driver of a team responsible, under severest penalties of imprisonment, according to the degree of the offense, for every accident or injury he may cause.

The entire story is told in the few lines above; the remedy for the speed evil is given, and it is up to the authorities to pass laws that will govern the situation the way it ought to be governed. The whole trouble is that graft is so imbedded in all municipal fabrics that laws are enforced that suit a purpose best, regardless of justice and the rights of all classes.

The most damnable and most dangerous monster is the trolley car, running as it does anywhere from 10 to 30 miles an hour in crowded streets and past intersecting thoroughfares with little or no warning of its thundering approach until it has committed murder.

There has been a mass of jumbled laws passed in various sections of the country. Some are reasonable—95 per cent of them are unreasonable. Most of them are useless or inconsistent. The laws that will fit one city will fit another; that which will fit one rural section will fit another; that which is reasonable to one motorist will be reasonable to all; there are no varying conditions worth mentioning.

That is what must come in the end. The mass of jumble now called laws must go if the motor car and its driver is to be held to account for his recklessness or his carelessness.

CHANGES NECESSARY IN ROAD RACING

R OAD RACING in America is to continue; that has been settled. It was not so settled the day before the Vanderbilt cup race was run. The catastrophies which resulted in the pursuit of track racing had put a damper on racing in all forms and it only needed a little wind to kindle the spark into a blaze. Had there been a single fatality among the contestants in the Vanderbilt cup race it would have ended such contests. Happily the race was completed without such result. There were times, however, when it seemed as if it would be impossible to avoid killing a score or more of people.

If the race is to be continued it will be found that the entire scheme must be gone over and beneficial changes must be made. With the increasing interest in automobiles and such affairs as the Vanderbilt cup race, another year will possibly

see a quarter of a milion people on the course. Some means must be taken whereby such an immense throng must be kept absolutely away from the danger line, and the danger line extends on either side of the road for a distance of several rods.

If the race is to continue there must be material changes in the rules, else the manufacturers and other owners of racing cars will not have the heart to go into the contest with a considerable chance of having their entries thrown out after having demonstrated the ability of their cars to go the distance at a reasonable speed. There should be an early settlement of this particular point, inasmuch as it takes a long time to construct racing cars fit to represent this country against foreign productions. The question of guarding the course can be left open for some considerable length of time.



Traveling privale automobile shows ought to prove immensely popular-with the railroad companies.

There is one thing about an economy test that is commendable—the participants spare no expense to make a good showing.

The beautiful part of getting sample cars out early and selling them is that the attendants at the shows will be enabled to have a good time.

Boosting foreign and knocking homemade automobiles and automobiling is the sort of consistency with which the average American daily paper is blessed.

Notwithstanding horse shows, football games and other seasonable affairs, the automobile by no means has been forgotten-by the police and dinky administrators of justice and injustice.

Pretty nearly all the old cycling stunts -including the dead broke tour-have been performed by motorists. The man who will reach the north pole in a motor car will find himself amply rewarded with glory, however.

It's a pretty tough rap at home talent for the prince of Wales to select an American for chauffeur for his trip to India, and this on top of the fact that King Edward's chauffeur is an American. But the prince did select an English car.

度度 If Czar Nicholas II should make his escape from Russia in an automobile it would not be among the impossibilities. Such a trick would be a good boost for automobiling, and, by the way, this is a hint for some enterprising manufacturer to do an advertising stunt.

By the time Percy Megargel has completed his out-west and back-east tour he will be fitted to stand a trip to the arctic regions or to-the equator.



IN BRIEF

Senator Morgan makes up card for Ormond-Daytona beach meet, reducing number of events to seventeen, with fifteen of them championships; feature to be a 2-miles-a-minute

Britons regard Vanderbilt cup race as proving that America's progress in automobile con-struction, while only what was to be ex-pected, is not enough to scarce them.

Percy Megargel, transcontinental tourist, reports his arrival at Burns, Ore.; he is given scare in mountains by runaway hauling load of dynamite.

New York's constitutional amendment, which comes up at next election, provides for expenditure of \$50,000,000 on good roads.

Recent additions to New York's row show that cost of Gotham's garages, when all done, will run into millions.

Cadillac Automobile Co. and Leland & Faul-coner Mfg. Co. merged into Cadillac Motor Car Co.

De Dietrich's American branch is closed; valuable cars go for song at receiver's sale.

E. R. Thomas planning trip to Paris show;

will make up party of Americans.
Reports from England show France is gaining foothold in United Kingdom.



It is a pretty hard slap at the horse to have automobiles line up at a horse show the way they did at the affair held last week at the Coliseum in Chicago. Likewise, this is a jolt for the motorphobist from which it will take time to recover.

Americans needn't think they're so much ahead of the world-Leipzic has already held its 1906 show.

Now that John Farson is slated for president of the American Automobile Association, red will be the prevailing color in automobile bodies and upholstery.

France may drop the road racing game, but after it has been out in the cold one short season it will be glad enough to come in and toast its shins by the fire-

发发 While the automobilist goes on giving figures to show that the motor car is by no means as dangerous as the horse-drawn vehicle, the police go on with their process of extracting coin from the automobilist.

State Senator McKee of New Jersey, has drafted a bill which starts out with "Any man driving an automobile in a drunken condition will be liable to summary arrest." Intoxicated cars would better steer clear of New Jersey.

Toot-Toot is the name of the official organ of the California Woman's Automobile Club and the San Francisco Motorcycle Club. To add to the excitement, it is published by the Gabriel Printing Co. The initial number is just out and it is declared that this is not the last toot,

The only machine that failed to finish in the German commercial trial was an old beer van, which kept up with its load until the sixth and last day. That's going some at that, for anyone who can carry a load for nearly a week, while hardly eligible for a blue ribbon, should receive favorable mention.



LAST WEEK CHICAGO HELD ITS ANNUAL HORSE SHOW-THE HORSES WERE ALL INSIDE THE COLISEUM, HOWEVER

SCARE FOR MEGARGEL

Tourist Runs Afoul of Freighter Loaded With Dynamite— Horses Run Away

Burns, Ore., Nov. 1—Special telegram—The Reo Mountaineer pulled into this place last night, and this afternoon we head for Prineville. Burns is rather lonely, being 150 miles from a railroad. With the departure of the Reo Mountaineer from Boise City all communication from the outside world was cut off for some time, as after leaving Ontario we left the railroad and telegraph line and struck off across the mountains to this point, following the old wagon trail now used by freighters and their six, eight and ten-horse outfits.

Speaking about freighters brings back to my memory a little adventure we had with one last Sunday. We were slowly winding our way up a narrow mountain pass when we encountered a four-horse freighter coming down the steep grade. Luckily there was a little level stretch in which two teams could pass and I pulled the Reo to the side of the road—the side next to the precipice—and stopped. The freighter descended from his high seat and after looking over the situation returned to his perch and drove on toward the automobile.

Everything went well until the leaders were within a dozen feet of the silent machine, when they suddenly wheeled and, dragging the wheel horses with them, turned completely around in the narrow road. The driver, expecting his vehicle with its two tons of baled hay to upset, jumped and dropped his lines. Strange as it seemed, those four horses succeeded in turning that wagon and its load completely around in that narrow 12-foot road and commenced to run up the hill. A telephone pole, which was badly shattered in the mix-up, brought the truants to a stop and the teamster caught his horses before any damage, other than a broken whiffletree, had been done: He told us afterward that there were 100 pounds of dynamite on the wagon under the hay, and what might have happened to the Reo Mountaineer and its crew had this exploded when the wagon struck the telephone pole can only be surmised.

All easterners have read of the wild, or rather half-wild, western cattle that roam the prairies in this section. It is the custom to allow the herds to run wild all summer in the mountains and to hold a round-up in the fall. Each owner then drives the critters bearing his brand down into some valley for the winter months. Between the old toll gate and Boise, a stretch of 50 odd miles over the mountains, we ran through a drove of some 3,000 head of these wild cattle being driven in sundry small herds and bunches toward the Boise valley for the winter.

At Boise we added to our equipment. Thick sheepskin gloves, high laced water-proof shoes, heavy sweaters and heavy underclothes have been added to our wardrobe for the 700-mile drive over the Blue and Cascade mountains to Portland. Reports from all along the route say that

there is from 6 inches to 2 feet of snow on the passes, and the unbanked turns—in many cases very sharp—are more or less dangerous to take with an automobile. With our equipment of tire chains, sprags, windlass and cable, Bailey won't-slip tires, etc., we feel confident that we can take the Reo anywhere horses can drag wagons, and despite the stories of impassable passes, exaggerated in many cases no doubt to frighten tourists, both Fassett and myself feel confident of getting through with our Lansing product.

The set of four original Diamond tires that brought us all the way from New York were exchanged for new ones here. This is the first time we have changed our tires on the trip, and it was done more as a precaution than because necessary. In the center of Oregon, over 100 miles

SLOWS UP SPORT BOOM

Failure of Foreign Motor Boat Campaign Checks the Growth of Water Pastime

London, Oct. 21—It would really appear as though the motor boat movement has had a severe check—at least the racing section of it has. Last year France in particular effervesced over motor boat racing. Cross-channel, cross-Mediterrancan, Paris-to-the-sea, and Arcachon were merely leading items in a large and eagerly filled program. On our side we had big regattas in Southampton roads, at Burnham-on-Crouch and other places, and it was confidently expected that motor



SAMPLE OF IDAHO MOUNTAINS

from a railroad, would be a bad place to have tire trouble, so we are taking no chances. The original set of Diamonds will be returned to the Akron factory, recovered and again put on the wheels of the Reo Mountaineer ere it returns to New York city.

Our sand tires, used once in Wyoming and once in Idaho, will be freighted to Portland, as we will have no further use for sand tires until we get in the vicinity of San Francisco. They proved most useful, though, on the two times they were used, and it would have been impossible to have got through without their aid, especially on the 7-mile stretch of sand between Ross Forks and Blackfoot, when it was almost impossible to travel without them.—Percy F. Megargel.

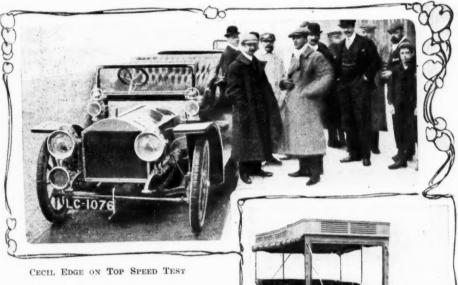
in 1906. But it has been anything but that. In France it has been akin to a fizzle, thanks, no doubt, to the disastrous result of the cross-Mediterraneean race, which practically wiped out France's latest developments in high speed motor craft. And our own program has not been much better. Last year's excitement was too intense and feverish to last-the movement necessary to make the new boom possible, and the result has been that, with but scanty additions to marine motor racing ranks, the season has been quiet even to was overdone. But land motoring was too engrossing for those who had the money disappointment. But for the presence of the Napier boats, all built last season, very little attention would have been attracted to the movement in England, while, despite activity on the part of leading French motor makers, it has been almost moribund over there. The Paris-tosea race, which was such a sensation in 1904, was a walkover for a comparatively small boat of no real pretensions. No French competitors to the English Napiers could be found at Arcachon, in the Harmsworth race, and at the Burnham-on-Crouch motor boat meeting, which has just wound up the British automobile club's 1905 sporting program. While there was an abundance of events spread over 3 days, competition was almost absent. Indeed the meeting was so ill supported that it had be postponed in order to permit the English boats racing at Arcachon to get back to swell the lists. It was well it was so, for there was little else to see in the way of sport. It is to be feared that motor-boat racing is not a popular form of sport at the moment. It is slow to watch and expensive to exploit. But then it makes more moderate demands on the enthusiast's purse and when there are not so many land distractions for the motorist it will probably have a look in. Meanwhile the pleasure side of marine motoring is going ahead, but it, too, is cramped by reason of high prices at the moment for satisfactory articles.

Over here they are keeping an eye on the healthy complexion of the sport on the other side of the pond. While America has not attempted anything in the line

DO WELL IN ENGLAND

Season's Report Shows French Makers Have Gained Strong Footing in Kingdom

London, Oct. 21-Although we are practically within hail of the Olympia show, quite a lot of uncertainty appears to exist regarding not merely the new features to be disclosed but the very prices at which the new season's trade is to be campaigned. Bringing forward the date of the show from February to November, on top of a long-drawn-out trading season, and the uncertainty created by the Tourist trophy race and its possibilities, have caught British motor car manufacturers



of international competition, she seems to have hit the right idea with her regattas and especially the long tour to the Thousand Islands, which made an impression on motor boat enthusiasts here. It was regretted that neither the Chal-lenger nor Dixie came over to compete for the Harmsworth cup. France's case of cold feet, which marred what ought to have been a brilliant international event, and America's withdrawal, although anticipated, disappointed those who had heard so much of the speed shown by Brokaw's and Thomas's creations. Harmsworth is going to try again next year and will renew his trophy, which this season was taken by Napier in that much-to-beregretted fluke race, and it is anticipated that during the winter months France and America will be able to compete.

EXPORT TRADE GROWING

Washington, D. C., Oct. 30-The export record is growing with every succeeding month. During September automobiles and parts to the value of \$194,499 were shipped to various foreign countries, which is a big gain over the shipments for the same month of last year, when the foreign shipments were valued at \$123,-487. For the nine months ending with September these exports were valued at \$2,235,633, as compared with a value of \$1,445,986 and \$1,192,829 for the corresponding periods of 1904 and 1903.



PRINCE OF WALES' ARGYLL CAR

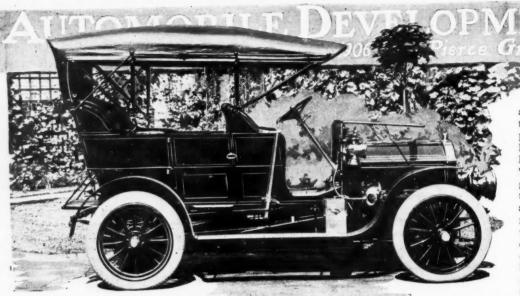
napping while the foreign section of exhibitors are hampered by the fact that their headquarters arrangements have all been built on the Paris show date-a fortnight later than Olympia. But such disturbances always precede a big show and always leave little or no trace when the show is held; therefore little real attention is paid to them. Everybody will probably be ready in time, for the issues are too momentous to admit of failure through mere lack of working hours. In the course of making inquiries on these matters the writer has been able to arrive at a very fair idea of the trade done in this country by the leading French houses, and as the figures will no doubt interest manufacturers on your side they are given. First of all come the Darraeqs,

whose total of imports runs to 971 cars in the year ending September 30 last. This is almost 50 per cent more than the Darracq trade of 1904 and the increase is probably due to having been very early in the field with stylish cars in which ample power was given at prices that looked very low until the remainder of the French makers came out with their lists. But the cars have been soundly handled and on the whole have given satisfaction. The next firm in point of numerical order is undoubtedly Panhard & Levassor, whose total cannot be given exactly, but it is in the region of 800 cars. These represent a higher aggregate value than Darracqs, as the prices are individually higher. Next come the Clement Talbot cars, the great majority of which have been imported, despite the fact that the company has a large factory in London. Its total is about 700 cars, and it is doubtful if more than one or two really British firms have individually exceeded that total. Then De Dions weigh in with 576 cars, most of them of the single-cylinder type, and then Peugeot with 400 and Gladiator with something less, stand out clear from the remainder of the crowd. Renaults, C. G. V.s and Mors have done well, but their prices are high and quantities are in consequence restricted. As all these concerns are mapping out next year's trade in this country on more extensive lines, it needs little argument to show that the British manufacturer has a long row to hoe before he can capture the market they have secured on his doorstep. And when America joins in, as we confidently expect it to do in a few years' time-or lessthings will be a trifle lively.

The De Dion cars for 1906 have not yet reached this country, but the writer is able to state that they will run into six distinct patterns, starting with an extra cheap 6-horsepower type. This, however, will not be ready before June. It will be, in common with the ordinary 6-horsepower and 8-horsepower, a single cylinder with the patent De Dion expanding clutch gear change. A 9-horsepower type will also have a single cylinder, but the gear in it, as well as in the 12 twin cylinder and 15 and 24 four-cylinder cars. will be of the sliding pinion type.

Harry S. Schuyler, an American, hailing from Philadelphia, and chauffeur of Consuelo, duchess of Marlborough, while she was visiting in America, has, upon her recommendation, been selected to drive the prince and princess of Wales on their motor trip through India. The car that royalty will travel in is an Argyll of the same make as the one which won the recent Tourist trophy race on the Isle of Man. It was ordered for the prince by the Earl of Shaftesbury and will seat seven people. It is painted in cream color and upholstered in blue, with a specially designed canopy with sun blinds and windows. King Edward also has an American driver, one Staunton, who put his O. K. on the application of Schuyler.

The people are still talking of the performance of Cecil Edge, who drove his sixcylinder Napier from Brighton to Edinburgh on his top gear, the 420 miles being done in 231/2 hours.

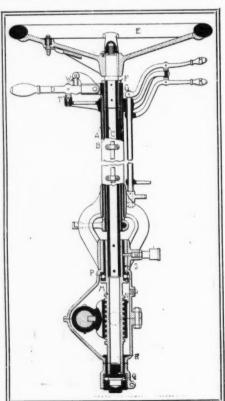


HREE models will be put on the market for next year by the George N. Pierce Co., of Buffalo, N. Y. One will be the well known 8-horsepower Pierce stanhope, and the two leaders a 28-32 horsepower touring car and a 40-45 horsepower machine. Both of these models are similar in practically all lines, the cylinder capacity of the latter being much greater as well as the other parts being considerably strengthened. In the line of changes over the Pierce Great Arrow that won laurels in the Glidden tour, the most noteworthy is the changes in the sliding gear set, direct drive on the high speed now being used, this is new with Pierce machines. Other changes are found: The inverted arched front axle has been replaced with an I-section bronze one, which, like the previous ones, has a heavy inverted arch between steering knuckles, with seatings on which the springs are clipped. The carbureter is altered in that the float is fastened to the stem and a ball valve used instead of a needle one. The shape of the mixing chamber is changed, it being a little higher. The following details are of the 40-45 machine:

The frame construction is made from pressed steel of 20 to 30 point carbon steel. The channel is 41/2 inches deep in the center and tapers to 2% inches at the ends. Three tie pieces unite the side members, each is of section similar to the side ones which they connect and is riveted in place and reinforced by angle plates. At the ends are other cross pieces. The front semi-elliptic springs are 40 inches in length and the rear ones 53 inches. The front ones are shackled at their rear ends-the shackles being above the springs so as to work under compression instead of tension so as to prevent the possibility of the spring flipping under the shackles and endangering the steering. The rear springs are shackled at the rear ends but positively connected at the front. The axle A has the flattened seating B, with the vertical center bolt E piercing the spring leaves C. The clip D bolts to projected flanges on the seating B.

Pierce bodies are of new design. Cast aluminum is used almost exclusively in their construction. Front seats are of the individual type. In the rear is accommodation for three passengers with baggage. The dash is dished and has solid brass mouldings and within it are two cabinets for carrying small articles. The wheel base is 109 inches.

The Pierce motor is a four cylinder one, with separately cast cylinders, the castings being flattened on the sides to admit of the cylinders being placed closely together, not making the motor length unduly long because of the four separate eastings. In the 28-32 horsepower machine the bore and stroke are 41/4 by 434 and in the 40-45 horsepower model these measurements are 5 by 31/2 inches. Each cylinder is an integral casting with the exhaust valves in ports on one side and the inlets in similar ports on the other side. The valves are interchangeable and have a diameter of 1 15-16 inches. The removal of them is a simple



THE PIERCE STEERING COLUMN

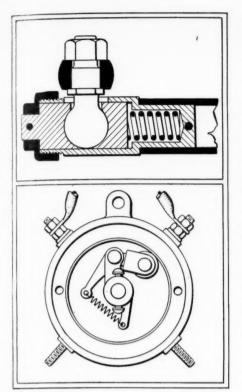
act, the screw A being removed, the cover B is loosely screwed in place and can be taken off by hand, after which the cover C is lifted out and the valve disclosed. The valve heads, beveled to 45 degrees, are not made integral with the stems but are riveted, screwed and brazed to the stems. The usual rollers are not found on the bottom of the push rods, but hardened steel shoes D are made use of, these working in renewable bronze guides E. The cam shafts are driven from the front end of the crank shaft, there being a

small gear on the end of the shaft and above it another gear with which the two cam shaft gears mesh, the interposing of a gear between the one on the crank shaft and the two on the cam shafts permitting of the use of smaller gears.

The crank shaft is a solid steel forging with ground bearings throughout, running in adjustable bronze bushings. The shaft revolves on three bearings, two long end ones and a similar one between the middle cylinders. All of these bearings, as well as those of the crank pins, are 1 13-16 inches in diameter. The wrist pins are of steel, case hardened and ground and are secured by taper set screws. Marine type connecting rods, forged from steel and fitted with bronze bushings at both ends are used. The crank shaft bearing being carried on the top part of the crank case, the bottom part of the case can be removed for making examinations without dismounting any of the motor parts.

Motor lubrication is looked after with the greatest detail. On the bottom of the crank case is an oil pit F from which oil is pumped by the pump G and forced through the piping K to the oil reservoir L at the top of the exhaust side of the motor. The oil pump is driven by means of a worm from the cam shaft H. From the reservoir three pipes M, only one of which can be seen in the end section, but the three can be found in the side view. carry oil to the three crank shaft bearings. After passing through the bearings the oil enters the bored crank shaft at N, and by centrifugel force is carried to the crank pin bearings, lubricating them and then drops into the crank case, where it unites with the splash to oil the cylinder walls, the pistons carrying it for this purpose. The wrist pins are supplied also from the splash. It can be noted that in the top of the pipes M where they leave the reservoir are oil straining gauzes for the removal of dirt.

The commutator is of the roller type, and is placed vertically on a shaft between the third and fourth cylinders, and is driven by bevel gears off the cam shaft. The revolving contact is a hardened roller held against the casing by a coil spring so that long contacts with



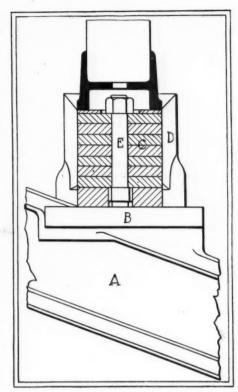
SPRING IN STEERING TIE ROD AND TIMER

the stationary contacts are more certain. Current comes from a 6-volt storage battery with ten dry cells carried as a reserve. Five individual spark coils with vibrators on each are carried, one serving as a spare in case any of the others gets out of order.

The water circulation is maintained by a rotary pump, driven by a gear meshing with the exhaust cam shaft gear, taking its supply of water from the bottom of the radiator and delivering it to the water jackets at the lowest point. The water leaves the top of the jackets returning to the top of the radiator. A belt driven fan behind the radiator is used.

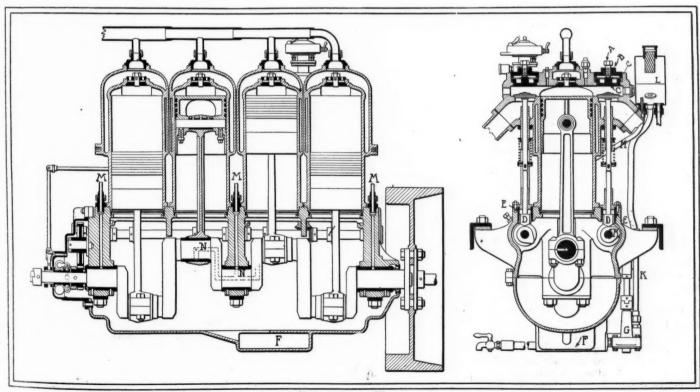
The Pierce steering column consists of three concentric tubes-A, forming the outside or supporting part of the column; B, the tubing to which the gear shifting lever D is attached; C, the central tube, to the top of which the steering wheel E is secured. Between these concentric tubes are suitable bushings, F at the top being between the central and middle tube and G between the middle and outer tubes. Near the base of the column, and just above the steering gear, is an expansion in the casing for containing the lever L, which connects with the gear shifting rod from the gear box. The shifting lever D has four positions, the forward one for the reverse, the neutral just behind this and the first, second and high speeds in order to the rear. On the under side of the lever is the wedgeshaped piece T for anchoring the lever in the notches in the quadrant, and a spring W on the upper side of the lever aids in holding the piece T in the notches. The lever D is slightly longer than the radius of the steering wheel. On the opposite side of the column are two levers, H for the throttle and K for advancing and retarding the spark. These are fastened to rods outside of the steering column and have levers at the lower ends connected up with the respective parts.

The steering gear consists of a multiple threaded screw M pinned at the upper end to the tubing C and provided with end-thrust bearings P and Q at its upper and lower ends. The screw has suitable bushing, R and S, at top and bottom. The upper bearings rest against a flange on the screw and the lower ones on a plate, plugging the lower end of it. Surrounding M is a nut N with trunnions on it, upon

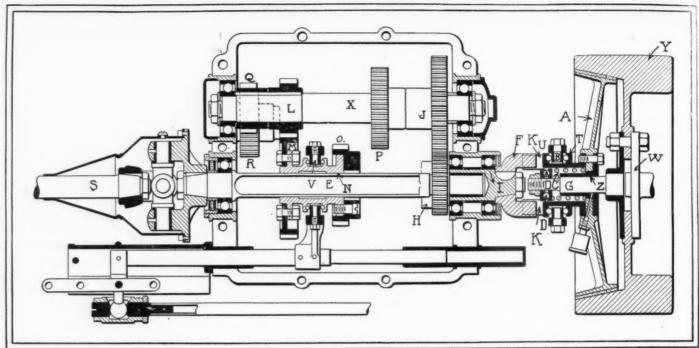


PIERCE FRONT SPRING SEATING

which are die blocks that slide within the jaws of a forked lever that carries the spindle connecting with the tie rods uniting the steering knuckles. This construction gives an irreversible steering gear, with none of the vibration of the steering wheels being communicated to the steering wheel. The column is in general dedsign the same as that at present in use, but when mounted on the cars will be more inclined, lending a touch of rakishness to the vehicle. The eliminating of the side change speed lever facilitates



SIDE AND END SECTIONAL VIEWS OF THE 1906 PIERCE MOTOR



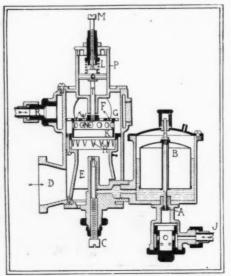
TRANSMISSION SET AND CLUTCH ARRANGEMENT ON 1906 PIERCE GREAT ARROW

entering the front seats from the right side, the brake lever not interfering.

By far the most noticeable feature of 1906 construction in the Pierce transmission gear, is the use of direct drive on the high speed. Previously, Pierce transmission gears have been constructed with the propeller shaft to the rear axle in line with the counter shaft of the transmission so that on all speeds ahead the drive was transferred from the main to the counter shaft. With the present flexibility of motor speed, it is possible to run the car the most of the time on the high speed, and using direct drive on this speed, means, as well now proved, a material conservation of power. The use of Hess-Bright ball bearings throughout must also be added as one of the features of the transmission. These bearings are of the self-contained type, the balls being retained by an inner and outer ring, grooved suitably to form races for them. The balls are separated by short coil springs with leather washers between the ends of the springs and the balls.

The transmission gear gives three forward speeds and one reverse. Connection with the engine is through the fly wheel Y, which is suitably bored to receive the cone clutch A carrying a leather facing. The clutch part A is bolted to the sleeve Z which has a bearing on the extension G on the crank shaft which has a flange equal in size to the flange W on the end of the crank shaft and between these the fly wheel is bolted. The clutch is engaged through the collar B working on the hub T, ball thrust bearings being used between the collar and the hub, and the hub is in turn held by means of the screws to the clutch. The spring C bearing at one end against the clutch for holding it in engagement, at the other end bears upon a collar providing with end bearings D, the bearings being held on the shaft G by the nut U pinned in position. In taking the drive from the clutch A to the gear case, a master gear H is made integral with the sleeve I to the end of which is keyed the claw clutches F, having two fingers which engage in slots K in the end of the hub T of the clutch. This arrangement allows the clutch to be moved along the extension G on which it rests when out of gear.

Within the gear shaft case is the main shaft E having its front end bearing within the sleeve I and the gear H and its rear bearing at the back end of the case beyond which it carries a universal joint connecting with the propeller shaft S to the rear axle. On this shaft, which is squared, is the sliding unit comprising two gears M and O both bolted to the sleeve N. This unit can be moved backwards and forwards by the end thrust collar V attached to the sliding rod in the side of the case. A noticeable feature in connection with this rod is the adjustable ball joint connection between it and the gear shifting rod outside the case. For high speed, the sliding unit is carried to the front of the case so that the four



THE PIERCE CARBURETER

projections on the front face of gear O mesh with recesses in the rear face of gear H, thus locking the shaft E with the sleeve I and the clutch A and causing the shaft E to revolve at the same speed as the crank shaft.

For slow speed ahead, the gears are meshed, as shown in the illustration; gear J on the countershaft X meshing with H and the countershaft gear L meshing with M. It must be remembered that the gears on the countershaft are keyed in position, revolving when the shaft revolves and not being slidable on the shaft. To study the speed ratio on the slow speed can be easily done. The gear H has twenty teeth, while J has forty, causing the shaft X to revolve at half the speed of the motor. The gear L with 18 teeth meshes with M, having 32, so that the shaft X revolves 1.77 times while the shaft E makes one revolution. When traveling on low speed then, the engine shaft makes 3.54 revolutions while the shaft E makes

For second speed ahead the gear O is meshed with gear P, and as both of these gears have the same number of teeth, the shaft E revolves at the same rate as the shaft X, causing the shaft E to travel at half the speed of the crank shaft. When reversing, gear M is meshed with gear R. The latter is an idler on a separate shaft in the bottom of the gear case and is in constant mesh with gear Q on the counter shaft, and being interposed between gears Q and M gives the latter a reversed movement.

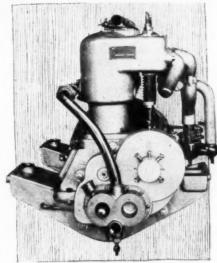
Careful construction is a feature of the gear case throughout. This can be noted in the caps which fit over the front and rear ends of the countershaft X, making it impossible for dust to reach the ball bearings. The latter are retained in position by means of a castellated nut which holds a washer firmly against the bearing rings.

The gear shifting rod is interconnected with the clutch A, making it impossible

to strip gears in changing speeds. This is accomplished by having the gear shifting rod extended toward the front with holes in the extension part corresponding with the different gears. Into these holes drop bolts. A bolt is connected with the bell erank lever moving the clutch so that when the clutch pedal is depressed, the clutch is thrown out and the bolt withdrawn, permitting of the gear shifting rod being moved by the changing lever. Should the pressure on the clutch pedal be released before the gears are in mesh the bolt will bear on the gear shifting rod, not letting the clutch into engagement until the bolt drops into the hole in the rod.

The transmission of power from the gear set to the road wheels is through the jointed propeller shaft S, part of which is shown in the section of the gear case. Each end of the shaft carries a universal joint, one of sliding patterns for shortening the longitudinal length of the shaft when the springs are depressed. In the rear axle, of the live type, the drive shaft is divided in the center, each half carrying one of the bevels in the differential. Ball bearings are universal, both for carrying the car and taking up end thrust. The differential runs in oil.

The 1906 Pierce carbureter is altered in a few respects from the one in use this year. In this connection the ball valve A on the bottom of the stem carrying the float B is used instead of the needle valve previously, and the action of the opening and closing of the valve is simplified in that when the float rises the stem being rigid with it is raised and the fuel passage closed, whereas in this year's type a pair of lever arms are used at the bottom of the float on which it rests, thus raising the stem which is not fastened to the float, but moves freely in the center of it. The adjust-ment of the needle valve C is most accessible. A slight change is found in the height of the space E through which the air travels after entering through D. The space E is slightly contracted so that the inrushing air is better directed against the head of the nozzle. In ordinary running the air and gasoline, after mixed above the nozzle, pass through the holes W in the top of the valve G and pass out through opening F to the motor, but when the motor suction increases enough mixture cannot pass this way to satisfy the motor and the valve G is raised against the tension of the spring L within the dash pot P, and air passes through the triangular openings H, the part of the valve G, shown at K, having been raised the holes H are gradually uncovered. In uncovering these holes the smaller part is uncovered first, and as the spring L is pressed together and greater force is needed to press it still further, the openings H widen so that a very slight raise of the valve part K will let in more air than similar raises when the valve is just starting to uncover the holes. It is understood that when the motor is running very slowly the valve G is much lower than shown in the illustration, in fact, the top of the valve rests on the shoulder, so that all mixture passes through the holes W, but with a little greater motor speed the valve G is raised and the radial holes N uncovered and



END VIEW MILWAUKEE MOTOR

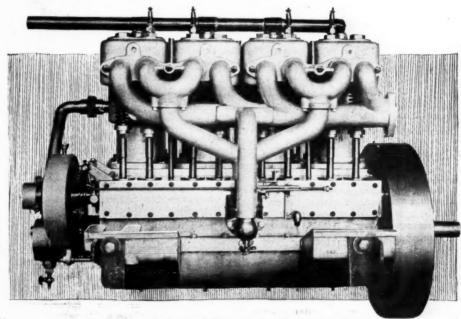
more mixture passes, but with still greater speed the valve is further raised and the V-shaped series of holes H gradually uncovered, and air that does not pass by the spraying nozzle is admitted through them. By thus taking air to the motor that loes not pass by the spraying nozzle the suction on gasoline in the nozzle is slightly reduced and too rich a mixture at fast motor speeds avoided. The dash pot piston Q, solid with the shaft T, is used to prevent fluctuations of the valve G, the dash pot with air pressure above and below the piston makes the movements of the valve much more gradual. At the top of the carbureter is the adjusting screw M by which the tension of the spring L can be varied and the amount of pressure to lift the valve G varies. With a compressed spring more motor suction is needed and with a slight compression of the spring less is needed. The mixing chamber is heated by exhaust gases entering through the passage R.

The brake drums on the rear wheels serve for both the regular and the emergency brakes, the inside of the drums being used for internal expansion brakes, foot applied, and for general use, and the outside for the lever—applied emergency brakes. The emergency bands are made of steel, with bronze lining, and are pivoted at the bottom, both top ends being drawn together by a toggle joint arrangement, the internal bands, or shoes, are also pivoted at the bottom and are expanded by a cam. In both sets coil springs normally hold the bands away from the drums. Both sets are interconnected with the clutch, the latter being disengaged with brake application.

MOTOR MADE IN MILWAUKEE

A 36-horsepower gasoline motor especially designed for use in commercial vehicles and large touring cars is being manufactured by the Milwaukee Auto Engine & Supply Co., of Milwaukee, Wis. It has a bore and stroke of 41/2 by 5 inches and has a shaft speed of 150 to 1,600 revolutions per minute. The motor follows standard lines used in separatelycast cylinder engines and has both sets of valves on the left side and operated from a single camshaft. Undue length of the motor, owing to separately-cast cylinders, is guarded against by having the castings slightly flattened at the sides so that the cylinders stand close together.

The aluminum crankcase is cast in two parts, joined at a horizontal center line. both parts being divided into four independent spaces, one for each of the crankshaft throws. This construction permits of the use of five extra long bearings for the shaft, and also facilitates the lubrication of each cylinder bearing, as well as the cylinder walls, the oil for the splash having no opportunity of flooding one cylinder and starving the others. On the bottom half are four supporting arms. two of which are provided with oil reservoirs for supplying oil to all the main cylinder bearings. The top half is divided into four chambers, on top of each of which is an opening in which the cylinder is bolted. On the right side of the top half of the case are four large inspection openings, covered with caps especially arranged for quick removal, so that the inspection of the crank throws may be quickly made.



INTAKE AND EXHAUST SIDE OF THE MILWAUKEE MOTOR



THE PRACTICAL RUNABOUT WHEN FINISHED

The crankshaft, made from 30 point carbon steel, is a drop forging, ground to 1%inch diameter, and runs in bronze bushings, which are machined on the wearing surfaces. On the rear end of the shaft the 120-pound flywheel is fastened with screws and keys and on the front end of the shaft is fitted the driving gear for the half-speed shaft and the circulating pump. The two end cranks are set in pairs opposed to the center cranks, producing explosions at every half revolution, the order in the different cylinders being second, first, third, fourth. The connecting rod pins are ground and bored hollow to furnish lubrication to the lower connecting rod bearings and to the two

end crank bearings.

The valves are located in the bottom of the ports, the inlets in the two front and two rear cylinders being at the adjacent sides of the ports, so that Y-piping can be used in conducting the mixture to each pair. The valve heads are made from grey iron, beveled to 45 degrees, with 2-inch top diameter, which tapers to 15% inches. The steel stems, with hardened ends % inch in diameter, are driven into the heads, and at the lower ends are slotted for flattened keys, on which rest the aluminum cups for retaining the tension of the valve springs. The eamshaft is a %-inch ground rod, and carries the commutator on the front end. The cams are made in pairs, the intake and exhaust for each cylinder being machined from one piece of metal, which is pinned to the shaft, the pins in turn being secured by aluminum threaded rings. On the bottoms of the push rods are hardened flat flanges which rest on the cams and have loose vertical stems working in bronze guides. The camshaft revolves on three long bronze bearings and runs throughout its entire length in a bath of oil.

Pistons are 6 inches long and ground .003 smaller than the cylinder bore. They carry three compression rings and wide oil grooves. The former, 5-16-inch wide, are eccentrically ground and pinned against rotation. The wrist pins. 11/8 inches in diameter, made from hardened tool steel.

are hollow bored and held in position by two setscrews and locknuts.

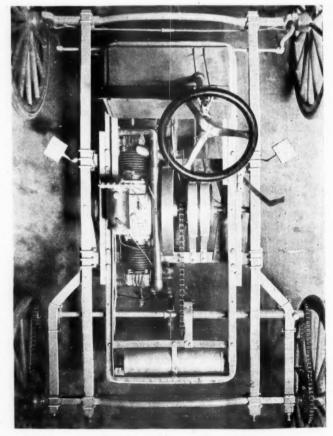
Water circulation is furnished by a bronze gear pump, shown in the end view of the motor on the front end of the erankshaft. It has 1-inch pipe openings and supplies water to the lowest part of the water jackets at the right. The water after passing through the jackets leaves from the top center of each jacket and passes to the top of the radiator.

MADE FOR DOCTORS

The Culver runabout, built by the Practical Automobile Co., of Aurora, Ill., is the outcome of ideas of a physician, De

Los Culver, who has had considerable experience with automobiles and which led to the discovery of the motor ear's shortcomings from a physician's standpoint. The product of the Practical company can be considered a matter-of-fact runabout, one built wholly for service. It is, comparatively speaking, a small car, and, while large wheels are used, the body is so hung as to be as near the ground as the average automobile. Noteworthy in its design are the large wheels fitted with solid rubber tires, designed to overcome puncturing and still retain much of the resiliency of small pneumatics. In the power plant, consisting of a double opposed aircooled motor, connected through a planetary transmission and double side chain drive, nothing out of the ordinary is met, plain bearings being used throughout. This construction is to eliminate adjust ment while on the road, for the designer had almost wholly in view the needs of a physician in the matter of an automobile. and a physician simply must not break

The Culver frame is an angle iron rectangle with two cross pieces to carry the motor and transmission. Each cross piece projects beyond the side angle pieces to form seatings for the long side spring, extending from the front to the rear axle. Each spring is a semi-elliptic of six leaves, with the long bottom leaves clamped at the ends on the top of the solid square axles and in the center clipped to each frame cross piece. Both axles are slightly arched in the center, and carry little truss rods directly beneath, that on the front axle fastened at the ends to the lower part of the steering knuckle jaws and that on the rear fastened to the axle ends. As a support for the long side springs two extra frame pieces, serving as braces, are clipped to the rear axles just inside the wheels, and, extending forward parallel with the frame, support the ends of the differential countershaft and then turn inward and are fastened to the ends of the rear cross piece, serving not only as a side brace for the springs but a support as well. Both axles are of square section 11/4-inch to the side and are made of axle steel. The use of plain bearing for the road wheels is one outcome of the physician's experience, trouble having been experienced with broken balls, when emergency trips were being made, and to overcome jar the rear wheels are made with a 40-inch diameter and the front 38 inches. Solid tires secured by a center



CHASSIS OF THE PRACTICAL RUNABOUT

wire are fitted. The wheel base approximates 72 inches and a speed range of from 4 to 25 miles an hour is offered.

The motor has a 3 3-16-inch bore and 4-inch stroke, the rating being 6 horsepower at normal crankshaft speed. It is placed lengthwise at the left side of the frame, thus making room for the gear case to be hung at the right, with the flywheel and drive sprocket separating it from the cylinders, giving typical construction in the disposition of the power and transmitting parts. Each cylinder is surrounded by heavy circular flanges for cooling and in the heads and valve cages are longitudinal flanges. The valves, placed oppositely in the cylinder heads, are, in the case of the inlets, atmospherically operated but for the exhaust the usual push rods and camshaft are used. The valves are 11/2 inches in diameter; the inlets have a 3-16-inch lift and the exhausts 1 inch. Mixture is supplied by a Gaveleck floatless carbuereter, placed close to the crank case and a thumb lever on the steering column alters the throttle and another cares for the spark. The spark plugs are placed above the inlet valves. The commutator is fitted on the half-time shaft and is fully protected by a dust and waterproof case.

The planetary gear case gives two forward speeds and one reverse, a side lever giving the direct drive and the reverse and a pedal being brought into use for the slow speed. On a sleeve on the crankshaft is an eight-tooth sprocket, from which a single chain transmits to a twenty-four-tooth sprocket on the countershaft. On this shaft are sixteen-tooth sprockets connected with forty-tooth sprockets on the rear wheel. On slow speed the reduction is two and a half to one, and on the reverse three to one. A speed of 15 miles an hour is claimed for on rural roads. The differential is carried on the countershaft.

For lubrication a pressure feed oiler is attached to the motor at the top of the crankcase. The oil is fed according to the motor speed, stopping when the motor stops and starting when it starts. Six feeds leave the reservoir, one for each of the engine bearings, one for each of the two crank pin bearings and one to each cylinder. On the end bearing of the gear shaft is a grease cup; other grease cups are placed on the countershaft bearings. A Kingston muffler is fitted. A fibre lined band brake is fitted on the countershaft at the differential. The drum is 8 inches in diameter by 2 inches wide.

Steering is through a Brown-Lipe irreversible gear on the bottom of an inclined steering column. To facilitate entering the vehicle the wheel can be tilted. The body work is of piano style, 28 by 68 inches, with a free carrying space of 28 by 28 inches in the rear. The running gear is in Brewster green striped in carmine, with a black body. Black upholstering is used.

A COLUMBUS-MADE MOTOR

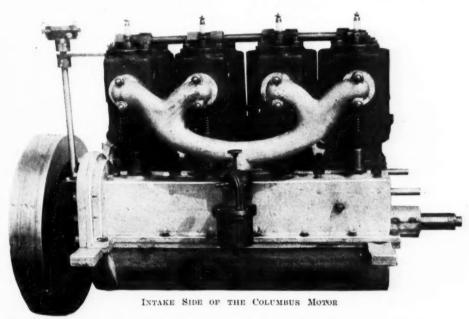
The Columbus Screw & Machine Co., of Columbus, O., manufacturer of marine gasoline motors, has for the automobile trade a four-cylinder motor. The motor follows the familiar lines used in water-

cooled motors of the four-cycle class, in which each cylinder is a separate casting with the inlet and exhaust valve ports on opposite sides, with the head as well as the valve ports cast integral with the cylinder. Thirty horsepower is given with a crankshaft speed of 1,200 revolutions per minute. The bore and stroke of the cylinders are $4\frac{1}{2}$ inches.

In manufacturing the aluminum crankcase the bottom part has been designed to rest on the chassis frame, four integral lugs being provided for this. With this mounting, the top part of the motor with all moving parts can be removed, leaving the bottom part in place on the frame and thereby not disturbing the alignment. The top part of the crankcase is box-like, with openings in top for the cylinders and others on the left side for

The inlet pipings on the right side are formed by an integral tubing of scrolllike curves, each branch being secured to the valve port by bolts. By carrying the carbureter close to the crankcase the mixture has a short distance to go and no sharp curves to pass. The spark plugs are placed vertically in the cylinder heads. The commutator is carried on the top of a vertical shaft at the rear end of the motor, a brace from the top of the back cylinder forming a top bearing for the shaft. Bevel gears transfer the drive at the bottom of the shaft. The water cooling arrangements are standard throughout, one set of pipes connecting with the cylinders through the heads and the others through the sides. Circulation pumps, of any design, can be attached.

The length of the motor, owing to sep-



inspection. The rear end of the case is removable and the end bearing is carried in the end plate. The crankshaft, made from 30 point carbon, hammered steel, has five bearings, two long ones on the end and one between each adjacent pair of cylinders. All the bearings are 1% inches in diameter, those on the inside are 2%, the front one 4 and the back one 5 inches long. The crankpin bearings are 1% by 21/8 inches. The flywheel is made plain or is adapted for friction clutches. The pistons are made with flat tops, straight sides and are fitted with three compression rings near the top. In addition there is a pair of shallow oil grooves near the bottom, adapted to be filled by the splash when the piston is at the bottom of the stroke. The crankpin is made rigid with the journals, and the connecting rods of drop forgings are eyeholed at the wristpin and split horizontally at the lower end. Oil grooves are made in the bearings. The wrist pins are 1 1-16 inch in diameter. Babbitt bearings are used throughout except in the top ends of the connecting rods.

Mechanical valves, 2 inches in diameter and with a lift of 3/2 inch for exhaust and 5-16 for intake, being on opposite sides, two cam shafts are needed. Both are hardened steel shafts driven by enclosed steel gears and splash lubricated.

arately-cast cylinders, is not more than normal, partly because the cylinders are mounted closely together and also owing to the round on the cylinder castings being slightly reduced at the sides. Accessibility has been kept in view in all the design, inspection caps give ready access to the valves, permitting of quick removal by taking off a couple of nuts and the commutator and water pumps are conveniently placed. Lubrication is by splash from either gravity feeds or positive oilers.

MOTOR CAR LITERATURE

The Beaver Mfg. Co., of Milwaukee, Wis., is mailing a four-page folder illustrating on the cover its two-cylinder opposed motor and on the inner pages showing plan and sectional line views of the same, together with a few measurements. The company has similar folders on its four-cylinder motors intended for use in large automobiles.

King automobile tops, made by the King Mfg. Co., Springfield, O., are shown attached to Logan, Thomas, Ford, Union, White, Cadillac, Packard and other machines in a long folder now circulated by the manufacturer. Besides illustrations, the sizes, prices and materials used are given. A few letters of recommendation are included.



THE ENGINE, continued—Like an ill-trimmed lamp, a gasoline motor may produce a most objectionable odor. The products of good combustion are substantially odorless, the amount of lubricating oil used in a good motor is so small that it need hardly be considered, so the presence of objectionable odor should be taken as an indication that something is wrong and search for the trouble should be instituted. The odor of gasoline indicates either a leak or an escape of vapor from the tank or failure to ignite the charge. At ordinary temperature gasoline evaporates very slowly and the amount that escapes from an automobile tank through the ordinary vent is so slight as to be imperceptible even by delicate noses. Much odor therefore would indicate either a leak or that the gasoline was abnormally hot; a condition requiring investigation and remedy. Remove the tank to a cooler place if it gets warm. Of leaks nothing need be said, for surely everyone knows that they are most dangerous and should be fixed at once. Failure to ignite represents a loss in fuel and irregular running and should have attention.

A pungent odor usually indicates carbon monoxide which in turn indicates an excess of fuel; a condition easily remedied by adjustment of the vaporizer. While it is true that forcing a fire by feeding it an excess of fuel, will. develop a slightly higher temperature, and therefore more power, this procedure is very wasteful, and such a condition should be corrected. It is therefore advisable to have the vehicle equipped with a larger motor than necessary and run with a poor mixture which, containing an excess of air insures perfect combustion with highest economy of fuel and without odor therefrom. An excess of lubricating oil in the cylinders of lubricating oil of too low fire test will likewise cause odor, the remedy for which is obvious. Usually smoking oil can be known by the blue Too much gasoline produces a black sooty smoke.

Overheating-This trouble arises from many causes. Steam engineers know that a steam engine must be kept hot to give best results, but many gasoline engine operators assume that the engine must be cold enough to permit holding one's hand against it and many stationary engines are found running this way; a clearly wasteful procedure. Because, however, under such conditions, a certain lubricating oil gives good results, and it is recommended and tried for automobile use and being of too low fire test, it smokes away, gumming up the piston rings, permitting the not gases to escape by the pistons, causing decrease of power and giving rise to other objectionable symptoms, all

termed overheating. If, therefore, this symptom is found after a change of lubricating oil, it is fairly safe to blame the oil. Insufficient lubrication produces similar results. Broken piston rings or scored cylinders permit the gases to escape, carrying the oil with them but leaving the heat in the walls as in insufficient lubrication. Some pumps will not start if there are air bubbles in the circulation pipes and where radiators are depended on, they should be felt frequently to know that the pump and circulating system is on duty. So unreliable are some pump circulations that telltale gauges are used. A dry crank shaft bearing, crank pin bearing, or in fact, any bearing revolving at speed is liable to overheat. Smoking, pounding and loss of power are symptoms and should be investigated.

Some of the anti-freezing solutions do not circulate as readily as water but get much hotter, causing trouble with lubricating oil perfectly satisfactory with water. They are sometimes the cause of premature ignition and other symptoms of overheating. When such solutions are used ample pump and radiator surface must be provided or else the solution must be such that it will circulate thermostatically quite rapidly as does water, or else the piping must be enlarged to equalize the slower circulation. Liquids should not be used that are likely to deposit solid particles either when hot or when cold. Some oils, for example, deposit carbon when boiled, as does molasses, which soon forms a coating on the cylinder walls and prevents proper cooling. Be sure to watch for symptoms of a clogged circulation. A gravity circulation is largely thermostatic and circulates fastest when hottest, but a pump friction or fan belt may slip most when hottest and allow overheating.

Starting Trouble—In a piece of mechanism containing several elements, all of which must be right at the same time to secure proper operation, starting troubles are sure to be found. Here the multiple cylinder motor has advantages over the single, for it is not likely that the mechanical parts of all the cylinders will become deranged at the same time. These parts, however, can be inspected and if the cam shaft turns, the valves open and close, the sparker parts operate and there is a good compression it may be assumed that the motor is ready to go if given fuel and spark. Since the ignition is the most delicate, it should be

first inspected, after which the carbureter should be examined. Broken wires, short circuits, bad insulations, stuck vibrators, weak battery cells, insufficient magneto speed and many similar things may interfere with the ignition. Gasoline not turned on, ice water in the fuel, dirt in the float chamber, waste in the air pipe, no gasoline, a broken or detached inlet pipe or an improper mixture being either too rich or too poor, may be among the fuel troubles. A cold mixture requires a larger spark than a hot one, but fortunately any battery is usually stronger after a rest than before.

Cold Weather-On a very cold day ordinary gasoline sometimes will not evaporate, but refuses to ignite, just as if it were kerosene. In such event the cylinder or the supply pipe should be warmed. This will not only warm the gasoline and make it vaporize, but will thaw out any ice that may be holding the float or stopping the supply pipe. A drop of water will lie in most unexpected places and when frozen into ice, causes trouble, which would not have occurred from the water alone. On this account all tanks should be provided with depressions having a cock at the bottom, which will tend to catch the water and permit it to be withdrawn. Frequently an engine is stiff, so that it cannot be turned rapidly enough to properly vaporize the charge. In this event either the cylinders should be heated by pouring hot water on them or holding a torch or lamp under them, or-with great care-squirting a little gasoline over them and ignite. Desperate means are sometimes necessary on desperate days, but when fire is used in this manner it must be kept under control. Do not squirt on a lot of fuel before igniting. This means a big fire impossible to control. Apply first a few drops and set fire to it, then apply more as occasion demands. You cannot explode an ordinary squirt can containing gasoline, and can direct and control the flame as wanted in this manner. Many users inject kerosene to cut the grease before leaving the motor after stopping. This is good practice, but too troublesome for the average man. Gasoline injected before starting on a cold morning will serve the same purpose. Care must be taken not to get too rich a mixture by this procedure and if it fails to ignite, turn a few times with the fuel supply shut off.

Formula for Starting-Starting troubles are sometimes the fault of the operator who neglects to do some important and necessary thing. Probably every user can remember a time when he failed to close the switch, open the throttle, turn on the gasoline or do some little thing of this kind simple but necessary. It is extremely aggravating to waste time and muscle for a needless reason like this and the only way to prevent it is to follow a formula each time, which includes all the necessary starting operations. Some of these may not be necessary for that particular start because, for example, the gasoline may already be turned on, but if each of the necessary points is made sure, the motor will usually start. Here simplicity again asserts itself. A simple motor needs but a simple formula.

EDITOR'S NOTE — This is the fifteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

PIONEER AMERICAN MAKERS RANSOM E.OLDS

E IGHTEEN years' experience as a builder of automobiles surely ought to qualify a man to write "veteran" after his name. Admitting the truth of this logic, R. E. Olds, president of the Reo Motor Car Co., of Lansing, Mich., is entitled to considerable credit for the part he has taken in building up the industry. It was in 1887 that he built his first automobile and since that time he has been prominently identified with the trade as a designer as well as a manufacturer. That first car. constructed a decade and a third ago, was of peculiar construction compared to the modern machine. It was a three-wheeler, the box or body being very deep so that the rear axle passed through the sides of the body in order that the machinery might be entirely concealed inside. For propelling power Mr. Olds used a 3 by 8 cylinder steam engine, with a horizontal porcupine boiler, with gasoline for fuel. After testing this for some time, Mr. Olds changed to a flash boiler. With this machine he experimented on the streets of Lansing, but it did not come up to Mr. Olds' idea of what was right, so it was taken back into the shop and more gray matter was used in improving it. It was thoroughly remodeled and when it once more made its appearance on the streets it looked like a new machine. It had been converted into a two-cylinder affair and four wheels were used instead of three Olds started out with.

While it ran much smoother than the original car, Mr. Olds was still far from being satisfied with it. The inventor became convinced that he was not getting the best results with steam power for the reason, he thought, that if put on the market, with its delicate parts, it would prove too complicated for the average user. All this while he had been experimenting with a little gasoline engine and boiler. It had been well tested and met with a ready sale. This led Mr. Olds to go to work on an explosive engine, which he finally evolved into something useful as a commercial proposition. It apparently gave universal satisfaction, so the inventor made up his mind that it was the only power for the automobile. He then proceeded to put this idea into execution, with the result that in 1893 he started to build an automobile with the gasoline explosive engine. But at this time he was far from reaching perfection. There was plenty of experimenting to do and Mr. Olds was determined to be right before offering his product for general sale. About this time the Chicago Times-Herald came out with its offer of \$5,000 to the winner of the first automobile race scheduled in America. Every inventor at all automobilically inclined set his wits to working to produce a machine that would not only pull down that \$5,000 pot, but would also demonstrate to the

American public that the automobile was practical. Mr. Olds was one of these, but when the time for the race arrived he had not completed the machine, so did not take part in this initial contest run through the snow and won by Duryea.

"In 1897 and the year following I organized the Olds Motor Vehicle Co. with a capital of \$50,000," says Mr. Olds in recounting his career in the last 8 years. "This company, however, did not secure any location, so that later on the Olds Motor Works was organized, with sufficient capital to take over both the Olds Gasoline Engine Works and the vehicle company, as I much preferred to operate under one head if I was to manage both companies. After this move, I was elected president and general manager of the Olds Motor Works and we then purchased the Olds Motor Works site on Jefferson avenue, Detroit, where I erected a plant and equipped it for the manufacture of motor vehicles. My first thought was to build a high-priced machine, but after spending a great deal of money and time in experimenting along this line, I could see nothing but discouragement, as was the case with other manufacturers at that time. The electric vehicle had made its appearance and was not considered a satisfactory vehicle; at any rate, the failures were on every hand. Then the steam machine came in and had 2 years of successful business. I could readily see that if there was not some moderate-priced machine to take the place of the \$700 steam machine that the automobile industry would soon be a thing of the past.

"Working along these lines, I abandoned my ideas on the high-priced mechines and turned all my energies toward a light practical machine at a popular price. When it was learned that I proposed to put out a machine for \$650 I was visited by several manufacturers who claimed that I would do a great injustice to the industry by coming out with a \$650 machine, when there was nothing on the market short of \$1,000 or \$1,500. I felt, however, that it would do the industry a great deal of good. I could see there were thousands of people that could raise \$650, but would not consider the higher-priced machines. My first thought was that it would be possible to produce a machine that would not weigh over 500 pounds, but when it was completed it weighed over 700 pounds, which was, later, made to weigh more by the adding of additional parts and attachments that I put on.

"In the fall of 1901, when I took one of these runabouts to New York and secured a small space in the Madison Square garden, I sold in 4 days over 1,500 machines. When it became noised around the garden that I would not take anything less than car-load orders, it seemed



very queer to automobile people. I was, however, successful in convincing the agent. Any one familiar with the conditions of the automobile business at that time could not help but believe that it did wonders toward stimulating the automobile industry. During all my experience in the manufacture of gasoline motors, my record for over 23 years, while I was handling the Olds companies, shows that there was never a year during that period but that we did an increasing business. When it was known that I had retired from the old company, I was visited by a committee from New York capitalists that offered to put in a million dollar company, all paid in, and turn over to me a half interest, or controlling interest, if I would accept of the presidency and management. At that time, my thought was that I did not care to again take up the care of a large manufacturing industry. Later, however, through the influence of friends I was induced to again enter into the business. So far it has been wonderfully successful and I have reason to believe the industry is in its infancy."



THE municipal automobile is no Utopian conception; it is a dollars and cents investment in which the purchasers, generally public employes, have been led in their actions in buying the motor wagon in preference to horse-drawn vehicles because the former offers a cheaper, quicker, equally as reliable and more comfortable means of transportation.

Two years ago-in fact, 1 year ago-the mayors and city fathers of many of the biggest American cities were racking their brains in drafting arbitrary legislation, restricting as far as possible, the safe and legitimate uses of the motor car. Today many of these same officials use the little runabout or the heavier touring car in their daily tours of inspection and work in and around the city. Water commissioners who, 12 months ago, jogged lazily along, contented with Dobbin's 5-mile-anhour jaunt, are going their daily rounds in the gasoline or electric runabouts and are much better pleased with an 8 to 20 mile ride on a pneumatic tired chug wagon than they previously were on the clattering steel tired buggy.

Park commissioners, in a metropolis like Chicago, find the motor car indispensable. Their duties require them to make daily inspections of all parks and boulevards coming under their jurisdiction, which duties, owing to the annual opening of new parks and the increase in the mileage of the boulevards, become impossible with the sphere of usefulness of the horse. Many park officials found their daily routine carrying them over a radius of 100 miles, a distance which could not be covered with three or four relays of horses in the average day. To such officials the automobile is daily proving a salvation; it carries them from place to place, at speeds equaling the limits prescribed by the city ordinances, which limits are, however, frequently exceeded, in order that the day's inspection may be completed within period of 8 or 10 hours. Superintendent Foster, of the Chicago South Park Board, which has fourteen parks under its control, covers 80 miles per day in his machine, while the assistant superintendent averages 102 to 105 miles per day in his round of parks and boulevards. On the same board Captain Kelly, of the police department, has 105 miles to his credit every day, and a few of the other park officials have an equally great daily mileage. All of these officials once used the horse, but the extra duties placed upon them by park additions made the motor car a necesity.

The fire departments, those departments under municipal control that rely essentially upon reliability and speed, are gradually adopting the motor car for the use of the fire chief and his assistants who are expected to be at the scene of the conflagration at the earliest possible moment. Chief Larkin, of Dayton, Ohio, is one of the recent converts and Chief Sullivan, of the San Francisco fire department, is another enthusiastic supporter of this use of the motor car. In New York, one or two fire chiefs have used the motor car several years and in other cities the heads of this department are experimenting with and testing the reliability of the machine. Fire chiefs who have used the automobile are unanimous in its praise, declaring that as far as reliability is concerned it is on a par with the horse and judged from the standpoint of speed and safety, while traveling on the thoroughfares, it far exceeds the equine. In Germany, England and France the use of the motorcar is not limited to the service of the fire chief, but hose wagons, chemical extinguishers, ladder wagons and fire engines propelled by gasoline motors are now in use in several of the leading cities. Berlin has used gasoline and electric fire engines in one of its

districts for over a year, during which time daily calls have been responded to and not on a single occasion have the engines failed in their work of fire fighting.

This particular field is specially suited for motor propelled vehicles, as the calls are few and far between, during which period of waiting the motor wagon has no maintenance expense, whereas the horse-drawn wagons and engines require relays of horses that are eating their heads off between calls. Three or four English

firms, among which can be noted the Wolseley concern, include the manufacture of fire-fighting machines in their repular output and manufacture chemical extinguishers, hose wagons and fire engines and recently have added to this list fire escapes and water towers for high service.

Hospitals, which, strictly speaking, are not under municipal control, are proving, however, a fruitful field in which the automobile manufacturers are finding ready sales. A few examples, taken from American cities, will serve to show the tendency in this regard. The Lakeside Hospital in Cleveland has used since January, 1903, an electric ambulance for transporting patients between the hospital, the city depots and their homes. Dr. Ranny, the hospita! superintendent, states that after 2 years of continual use, he would, under no circumstances, revert to the horse-drawn type. The ambulance used carries 44 cells of battery and fitted with solid rubber tires can easily make 12 and 15 miles per hour. The superintendent, however, has one criticism -the solid tires do not sufficiently reduce the vibration when traveling at 10 miles per hour over rough streets, and he recommends strongly the use of pneumatics. The Boston City Hospital has recently installed an electric ambulance fitted with pneumatic tires, which averages 16 miles per hour, and has a running radius of 30 This ambulance is constructed miles. along modern lines and is a great step in advance of the horse-drawn class. Private parties are even taking to the automobile John McCarthy & Sons, of ambulance. Syracuse, N. Y., lead in this line, having used one for some time, and now one of his Syracuse competitors has joined the ranks and installed a gasoline one for public and private service. These few examples indicate the suitability of the motor car for such work.

Other fields, for the municipal operation

of the automobile, are the use of water commissioners and their staffs who are required to make an almost daily round of the city reading meters, superintending the construction of water mains and attending to the turning on and off of the supply; street inspectors, whose duties require them to traverse all parts of the city, where street improvements are being carried on or where inspections are to be made; heads of electric lighting departments, who have their daily city excursions and in addition can be noted the almost numberless city officials, such as mayor, aldermen, sanitary boards, surveyors and others whose duties compel them to be in many different parts of the city on the same day. To all of these officials the motor car is well adapted; when in use it goes quickly on its mission and when idle it neither requires attention nor fuel.

The city of Springfield, Mass., the home of the air-cooled Knox automobiles, while small in comparison with the population of many other eastern cities, leads in the use made of automobiles by city officials and other men in public positions in the city. This may be owing to the fact of Knox cars being made in the city, but yet in other places where automobiles are manufactured the city officials are not so quick to use the motor car as has been the case in Springfield. Among the officials using ears, all of them being Knox made machines, can be noted City Marshal George M. Stebbins, with his motor patrol and ambulance; E. E. Stone, chairman of the water commissioners; A. A. Adams, superintendent of streets; Charles E. Ladd, superintendent of parks, and to this list can be added A. H. Yunker, superintendent of construction of the United Electric Light Co., whose interests in this work are closely associated with city enterprises, and J. E. Converse, superintendent of electric lights.

All of these officials have used the motor ear for periods varying from 3 months to as many years and the verdict of all is the same, "The automobile is much better and cheaper than the horse for our work." One and all of them have had the experiences common to pneumatic tires, flooded carbureters, broken spark plugs and burnt-out coils, yet in spite of these few looked-for occurrences, the motor car has sufficient merits to offset any little irregularities of running that come.

George M. Stebbins, city marshal of the city of Springfield, Mass., has used an automobile patrol and ambulance for the last 9 months, during which time the vehicle has covered 4,419 miles at a total cost of \$256.58, being an operating expense of 5.84 cents per mile traveled. Marshal Stebbins, in speaking of the success of the automobile patrol and ambulance to a Motor Age representative recently, said:

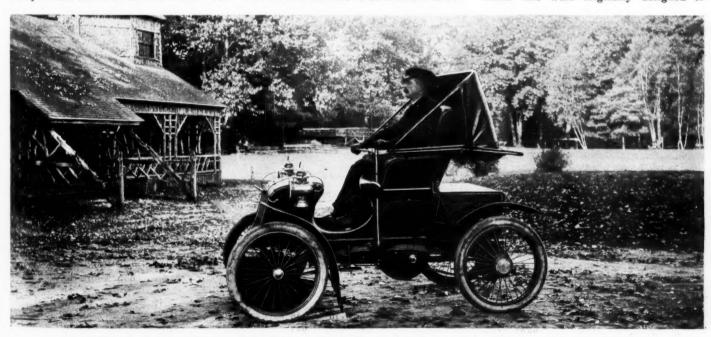
"That automobiles have come to stay is nowhere better demonstrated than in their application to the commercial lifeof the street and the speed with which large vans of merchandise are transported from place to place. This has led to the introduction of the automobile police patrol. In the year 1904 the police commission of this city placed an order for such a vehicle with the Knox Automobile Co. for the city of Springfield. This was completed and placed in active service about February 1, 1905. The automobile police patrol is propelled by a two-cylinder Knox engine estimated at 16 horsepower and a carrying capacity of fourteen persons. It is fitted so that it can be used as a police patrol or an ambulance, and has been used in the latter capacity in all emergency cases since its introduction. During the time it has been used in this department, covering a period of about 9 months, it has covered a mileage of 4,419 miles, at an expense, including repair, of \$256.58; doing the work of two horses.

"Comparing the cost of keeping and shoeing horses, and repairs on harness and wagons, as a matter of economy of maintenance the comparison is in favor of the automobile. This, however, is not the essential consideration. The quickness and dispatch with which the work is conducted, even though the expense was greater, is an essential element to be considered. Sev-

eral instances have occurred where from a humane standpoint the automobile has more than satisfied the promoters of the idea of using an automobile for police and ambulance work. One instance I note. which occurred a few months ago. A large touring car collided with a farmer's wagon in the suburbs of the city, some 3 miles distant from the police station, dangerously injuring one of the occupants. telephone summoned the automobile police patrol. Upon its arrival the injured man was placed on a stretcher in the patrol. taken to the hospital about 4 miles from the place of the accident, and after leaving the patient at the hospital the patrol returned to the station. The time occupied from the receipt of the telephone call until the patrol had returned was 35 minutes. The whole distance covered was 8 miles. This is only an illustration of the daily work of the automobile police patrol in this city. The reliability of the machine for service is excellent. It has never failed us as yet, except for some momentary adjustment, and that but a very few times. With the record of the machine for the past 9 months, its readiness for service, the quickness and dispatch of the same, and its economy compared with the use of the horse patrol and ambulance, the promoters of the introduction of the automobile police patrol and ambulance are more than satisfied with its success."

The Springfield Electric Light Co. has purchased two runabout machines for the use of superintendents of lights, at night, and construction work by day. Both of these runabouts are specially fitted for the work, having light carrying spaces for repair parts or small tools. One of them has come under the supervision of Mr. A. H. Yunker, superintendent of construction, who, in a recent conversation expressed himself in the following terms on the adaptability of automobiles for such trying service:

"We have used two single-cylinder Knox cars for the last 10 months, making a mileage of 27,600 for both machines. These cars were originally designed to



CHARLES E. LADD, SUPERINTENDENT OF PARKS OF SPRINGFIELD, MASS., WHO USES A KNOX FOR BUSINESS PURPOSES



MARSHAL STEBBINS AND THE SPRINGFIELD POLICE PATROL WAGON

carry some little weight and have room in the body for a small load. We have used them as runabouts, however, patroling street lights during the nights and following our construction work by day, so our economy has perhaps not been as good as it would had we a light runabout. We use approximately 1 gallon of fuel for 9 miles of running and the average cost per mile has been \$.058, including all repairs and renewals, but not driver, depreciation or interest. We have had very little tire trouble, the principal fault being sand blisters caused by sand working through cuts in the tread and packing in between the same and the shoe causing the tread to break. These cars average 90 miles per day and it is almost impossible to compare them with a horse. We would say, as a low estimate, that these machines have replaced six horses and would add that we used them all last winter with the exception of 1 week of soft snow."

"The runabout purchased in May, 1904, of the Knox Automobile Co., of this city, by the city of Springfield for my use," said A. A. Adams, superintendent of streets, "has given excellent satisfaction. In all, I have probably driven it more than 10,000 miles and it works today fully as good as when first used. I would say that I had considerable trouble with tires last year, but have had no such trouble this year. It has required 1 gallon of gasoline to run 11½ miles and the machine does more work than could be done with two horses."

"We have used in the water department," said E. E. Stone, chairman of the Springfield water department, "for the past 2 years, a single-cylinder model E Knox runabout. This has been in continual service, and largely on rough country roads, on work at such a distance from the city that it would have been imprac-

ticable to use horses, and it has given us good satisfaction during all that time."

A NEW YORK DELIVERY

R. H. Macy & Co., dry goods merchants of New York city, use fifteen electric delivery wagons in the delivery of their goods throughout the city. In speaking to a member of the concern recently a Motor Age representative received information on the running of the machines. The fifteen

wagons average 26 miles each per day, some, however, do 35 miles regularly every day, while others, owing to the nature of the work, drop a little below the average. Two and often three deliveries are made over the same district every day, the weight of the loads on the different trips and over the different routes varying all the time. Three thousand pounds have been carried on the wagons on many occasions. The power consumption for each vehicle amounts to .75 kilowatts per mile. As with all other delivery wagons the tire question must not be forgotten. Some of the tires endure all the way from 1 year to 18 months, the rear tires generally running 12 months and the front serving for In comparing the delivery 11/2 years. wagon with the horse-drawn wagons it has been found that each electric performs the work of one-and-one-half horse wagons, meaning 50 per cent increase in work over the horse. Macy & Co. have found the electric vehicle serviceable to a certain extent in their business, the extent depending entirely on the efficiency of the battery, which they claim varies greatly with the temperature.

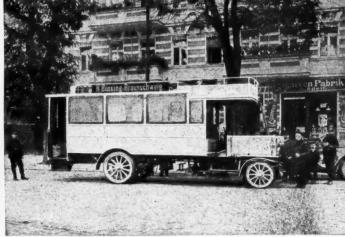
GERNSBACH VAN THE STAR

Honors in the van and omnibus trials of the Automobile Club of Germany, held over a course extending from Berlin to Spandau, from October 9 to 14, inclusive, were carried off by the omnibus entered by Gernsbach, of Baden, which finished first on each day's journey. The official winner, however, has not yet been declared, the German officials having taken the matter under advisement. The Gernsbach machine, or the single-deck Safe, as it is better known, is an omnibus carrying thirteen people, the wheels being fitted with solid tires in the rear and pneumatics in front. It was put in commission only on



A. A. ADAMS, SUPERINTENDENT OF STREETS, SPRINGFIELD, IN A KNOX CAR





DAIMLER THIRTY-PASSENGER BUS

Twelve out of the thirteen October 6.

cars that started finished, the laggard being the old beer van entered by the Daimler people, which has been knocked about over the rough cobblestones of Berlin's streets since 1898.

The competition was divided into classes for the heavier and another for the lighter machines. The ponderous vehicles being regarded as light-winded, were given only about 290 miles to make in the 6 days, while the others were required to do something like 421 miles in the same time. At the last minute the committee made its first trip over the route for inspection purposes and then made several slight alterations, which, however, did not work any very great hardships on the contesting machines in the several classes.

Two of the original field were scratched, but reenforcements were received in the shape of a Daimler two-cylinder, 10-horsepower alcohol-driven milk van and a 10-12horsepower two-cylinder spirit engine N. A. G. van, shod with pneumatics. H. Rosenthal's van was one of the absentees, while the other was a steam van nominated by Garrett, Smith & Co., of Magdeburg. This last concern scratched for the very good reason that the day the trials started they filed a declaration of insolvency for the sum of \$1,000,000. In class I the Daimler people withdrew their bus seating twenty-three people and substituted one with 18 horsepower instead of 25 and carrying thirty-two people, while the Daimler originally in class IV was reduced in weight and put in class III.

Early on the morning of the 9th the field was sent away, an official observer being in each car. His duty was to report each day on the vehicle's working, reliability, smoothness or otherwise of traveling, degree of annoyance through noise or smell, consumption of combustibles, repairs necessary and time taken for them, etc., etc. The observer was also held responsible for any violations of police regulations en route.

Hardly had the caravan gotten away on the first day's journey before it started to rain, but this did not prevent eleven of the rigs completing the journey of 60 miles to Gransee. The first in was the Gernsbach omnibus, which did its stunt in less than 4 hours 30 minutes. By 3 p. m. the other ten had registered. The beer van

got into trouble through a defective steering gear and stuck, while the Daimler van for 6,600 pounds smashed into a tree and broke an axle. The beer van, however, was ready to start in the next morning on the Gransee-Neu-Brandeburg stretch, a distance of 76 miles. Here again the Gernsbach put it over its rivals, reporting within 5 hours after the start, having averaged 15 miles an hour.

Fine weather favored the contestants on the third day and the Gernsbach proved that it could travel on dry land as well as it could through the mud by reaching Gnoyen first. This day's journey was 65 miles for the light-weights and the Baden rig negotiated the distance in 3 hours 37 minutes or 17½ miles an hour. The Daimler which broke its axle the first day had patched up so as to be able to keep in the running and it surprised the others by finishing a good second to the apparently invincible Gernsbach. It was a tough pull on the fourth day between Gnoyen and Goldberg, especially for those on the long course. recent rains and the miserable work of the road-mender extended each rig to the utmost. It was 2:30 in the afternoon before three of the machines straggled in. Of course the Gernsbach was Johnny-on-thespot, but this time it had company in the shape of the 3-ton Daimler and the N. A. G. delivery van.

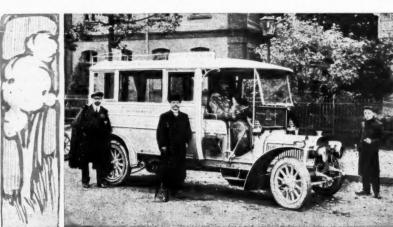
Again on the fifth day were the contestants forced to fight the allied forces of the weather man and the road-mender. Old BUSSING TWENTY-SEVEN PASSENGER BUS

Boreas, too, joined in the war and this combination slowed down the entire field, so that 8 miles an hour was considered going some. At 3 o'clock that afternoon the Gernsbach turned up at Kyritz, having covered 68 miles in 5 hours 31 minutes. The others straggled in one by one, until at 7 o'clock all were safely housed, the observers' reports filed and everyone working to get ready for the last day's run to Spandau.

Keeping up to the reputation it established all the way through the contest, the Gernsbach crossed the finish line at 1:37 on the sixth day, with the others strung out miles behind it. But the stragglers came hiking along by and by, so that all were checked in with the exception of the old beer van, which foundered somewhere along the road and could not be set going again to get to the tape before the officials left and the race was over.

While nothing official has been announced, it would seem that the Gernsbach had won by a city block. Of course, it all depends on the reports filed by its observer as to whether or not its consumption of benzine was in favorable proportion to its speed.

Following on the heels of these van trials came the Frankfort motor exhibition, which opened on the 20th and lasted to the 29th. H. R. H. Princess Friedrich Karl of Hesse was the patroness and all the leading motor people of Germany exhibited their wares, prominent among which was the commercial end of the game.







START OF THE RECENT BALLOON RACE OF THE AERO CLUB OF PARIS

A. C. A.'s Membership Full—The Automobile Club of America has reached its membership, having now on its roll 700 active and 200 associate members. There is a waiting list of forty.

No Kickers Here—The Franklin people made a hit with New York users of their car by sending half a dozen experts to Gotham to call on each patron and if anything was wrong with his car put it to rights free of charge and with the compliments of the company.

Spends His Velvet—J. Wicks, who owns the property on which the grand stands were erected for the Vanderbilt cup race finish, cleared up so much money out of his many concessions at the trial and final that he has just got rid of a portion of the surplus by Luying his first automobile, a 30-horsepower Pope-Toledo.

Test of Motor Guns—It is proposed to thoroughly test the automobile corps of the French army in the field maneuvers by having it attack the Lebaudy dirigible balloons. The motor cars will be equipped with light rapid-fire guns and searchlights and will follow the balloon, similarly equipped, and endeavor to put the air ship out of business.

June Time for Roadwork—Sidney J. King, pathfinder for the American Good Roads Association, after tracing a route in a Reo from Grand Rapids to Detroit, declares it to be his conviction that fall is not the proper time for the farmers to work out their road taxes. He believes that if the work was done in June the surface would have time to pack and work in so as to be impervious to the autumn rains and the spring thaws.

English Hold Secret Quiz-The motor car commission appointed by the English government to investigate the operation and working of the motor car act of 1903, with a view to its amendment and renewal, had its first meeting on Monday last. Its first proceeding was to decide that the press and public would be excluded from its deliberations, a fact which has taken a lot of the public interest out of the business. The commission is presided over by Viscount Selby and representatives from the local government boards of Scotland and Ireland. The chairman of the automobile club, the secretary of the Motor Union, the permanent official in charge of the working of the act at the local government board and

others were examined, but what they said and what they did history saveth not.

Queen Finishes Tour—Dowager Queen Margherita of Italy has just returned to Turin after a journey of 5,000 miles in her automobile through Switzerland, Germany, Holland and France.

King Is Generous—The king of Italy has hung up \$7,000 in prizes to be distributed among the exhibitors at Milan's international exhibition next year. Among the prizes is one for \$1,000 to be awarded to the best motor boat.

Jolly City Fathers—To show their appreciation of the paved streets movement in Muskegon, Mich., the automobile owners of that city recently gave the aldermen an automobile ride which ended with a banquet. The affair was in charge of Dr. C. J. Dove, president of the Muskegon Automobile Club.

Cripple Expert Driver—J. T. Landis, a reputed millionaire of Nashville, Tenn., who is deprived of the use of his legs, recently drove from his home to Springfield, Mass. He drove the car himself and averaged 175 miles a day. The brakes on the car are so arranged that Mr. Landis can operate them with his hands instead of his feet. On his tour he had his invalid's chair sent ahead of him each day for use when not in his automobile.

Phillies Wake Up—The Philadelphia Dealers' Association, after the summer's busy days, has come to life with a rush, and besides its effort to secure the use of the speedway has scheduled a hill climb, probably on Thanksgiving day, and a local show by its members, without the assistance of professional promoters. Runs and endurance and economy tests are being considered as means of keeping the interest alive in Philadelphia between seasons.

Beats Fish Story—Jackson county farmer found an automobile horn on the roadway recently and took it home and taught his chickens to recognize its honk as their feed call. Instead of calling the chickens in the usual way, the farmer or his wife would blow the horn. One day an automobilist in a car was driving by at the rate of about 15 miles an hour, all the time tooting his horn. The farmer's chickens took after the automobile and fourteen hens and three roosters ran themselves to death. And this story is in line with the one from Jersey, whereby an automobilist, honking his horn, at-

tracted a flock of Canadian geese, and ran over and killed two of them.

Seeks New Home—The Automobile Club of Washington has taken quarters in the Colonial hotel on H street, the temporary quarters in the Villa Flora clubhouse having proved unsatisfactory. A suite of rooms on the second floor has been engaged and the club expects to take possession within a week.

Start of Balloon Race—Doubtless the members of the Aero Club, of America, of which organization many prominent motorists are a part, will take an interest in the photograph of the start of the recent balloon race of the grand prix de l'Aero Club of France. Seventeen of the air monsters took part in the competition, seven countries being represented.

On Long Ramble—G. M. Huston and his wife and son of Chicago, were reported at Charleston, S. C., last week on a rambling tour through the south. They have been on the road since last April and the odometer showed 17,321 miles at Charleston. Their trip has taken them through the east, where they spent the summer at Atlantic City. It is their intention to continue their trip until Mr. Huston's winter home in the southern part of South Carolina is reached.

Bald Aids Cupid—Eddie Bald assisted a newly married couple out of a rice-throwing onslaught when he secretly whirled Mayor and Mrs. Cavanaugh, of Norwalk, Conn., over the road to New Haven from Hartford in the car in which he broke the 5-mile record. The wedding was the largest one of the fall season in Hartford. The couple went into a carriage only to pass out the other door and into Bald's car. Though 42 miles separates Hartford and New Haven, Bald landed Norwalk's mayor and his new bride on the college green in 1 hour 7 minutes.

Red Cross No Protection—Mayor Dunne, of Chicago has ruled that the red cross does not make immune from arrest physicians who violate the speed ordinances. The horse-drawn vehicles he declares to be in a different class, because at their top speed they are not dangerous, while motor cars, if allowed unlimited freedom, would endanger the lives of pedestrians. The mayor holds that even if a doctor is hurrying to a sick man's bedside record-breaking speed is not permissible and that the patient will have to take his chances in order that others may not be placed in jeopardy.

Wolverines Are Shy-Either the number of automobiles in Michigan was greatly overestimated or a large number of car owners have failed to comply with the state law requiring the licensing of automobiles, as only 2,700 licenses have been taken out at the office of the secretary of state. It was estimated during the session of the legislature that at least 5,000 machines were owned in Michigan. The license fee of \$2 on each machine goes toward the support of the department of good roads. The enforcement of the law requiring the license fee lies with the state authorities and if police departments do not require the payment of the fee it remains unpaid.

Long Run—One of the longest trips a motor to the Vanderbilt cup race was that of John A. Landis, of Nashville, Tenn., who made a journey of 1,430 miles in his White steamer by way of Cleveland and Buffalo.

Garage for Gas Man—Thomas Dolan, president of the United Gas Improvement Co., is now having a private garage built at his country place at Torresdale, a suburb of Philadelphia. The structure will be 53 by 28 feet in dimensions, and Stacy Reeves & Sons are the architects.

Makes Them Cough Up—Automobiles have been used in the campaign at Syracuse this year for the purpose of seeing politicians who are supposed to have money and making them loosen up. The machines have been scooting to every part of the city and it is impossible for a prospective contributor to escape.

Automobile Studio—R. L. Sleeth, Jr., an enterprising photographer of Wilkinsburg, Pa., the largest suburb of Pittsburg, has taken a unique way of getting business. He takes orders by phone, carries a complete photographic outfit for almost all kinds of work with him in his automobile and does all the work except the finishing touches away from his office.

Champion Car Owner—Claim is made that Colonel John Jacob Astor is the champion automobile owner, maintaining a stable of twenty cars reputed to be valued at \$100,000. It is said it costs him about \$15,000 a year to maintain this string, not counting salaries of chauffeurs, storage and fuel. Jefferson Seligman has had fifteen ears, while C. K. G. Billings, gas magnate, has twelve gasoline cars and one electric.

Clash with Horsemen-There's going to he a regular talkfest in Quakerville soon, and any one interested enough to do so can, by putting his ear to the ground, hear the rumble of approaching trouble. It is all owing to the members of the Philadelphia Automobile Dealers' Association having decided at its last meeting to petition the Fairmount park commissioners to grant them the use of the new speedway for a day or two each week. As the speedway is practically abandoned by the horsemen for 5 days of the week, it will be a triumph for the latter's dog-in-the-manger policy if the automobile owners are not permitted to burn up the new road for several hours at least one day in the week.

Quakers Celebrate-One of the most interesting features of Philadelphia's night parade to celebrate the winning of the American league baseball pennant by the champion Athletics was the large number of automobiles in line. As soon as the Quakers won the deciding game from Washington-the parade feature had been decided upon earlier-Manager W. F. Smith, of the local Rambler agency, made a ten-strike by offering the champions and the officials the use of ten machines. The offer was promptly accepted, and the next lay the Winton, Reo, Acme, Ford, Maxwell, Packard, Yale and other representatives made similar offers to the committee in charge of the affair. Each of the six divisions of the parade—and it was a huge affair-was in charge of one of the local newspapers, and in each fully a score of automobiles were lined up, all handsomely

decorated and illuminated. The Evening Telegraph took advantage of the occasion to put on the street for the first time the first of its electric delivery wagons. At present the Telegraph has no fewer than sixty-five horse-drawn wagons employed in this work, and it is believed that with a battery of twenty-five motor vehicles the same work can be done in a shorter time.

Fast Test—Ted Finch, of the Pungs-Finch Automobile Co., of Detroit, tested out a model F car by driving from his home city to New York to see the running of the Vanderbilt cup race, making the 880 miles, he claims, in 48 hours, his route taking him through Toledo, Cleveland, Buffalo, Geneva, Seneca Falls, Syracuse, Albany, Poughkeepsie and the east bank of the Hudson river to New York.

Chinese Student—Chan Hoey, a Chinaman, is in the Olds factory learning the game in order that he may return to his native land a full-fledged automobile expert. He is also way up in electricity, having been connected with several big concerns in that line. He has been in the country 8 years and expects to go home in 2 months and start a general electrical and repair business in Canton.

Twelve Cars in Athens-In view of the rapid growth in the demand for first-class automobiles and the remarkable success achieved in their construction in this country, the following data about automobiles in Greece will give American manufacturers an idea of the demand in that part of the world. At the present time there are twelve automobiles in the city of Athens. Three of these belong to the king and the princes. His majesty's car is quite a luxurious affair, and cost about \$4,000. That owned by Prince Andreas was presented to him by the czar of Russia. Most of the automobiles in use in Athens were purchased in France at a cost of from \$772 to \$1,930. Three new ones are now on their way to Greece. Automobiles are classed by the tariff law as four-wheeled carriages, which, upholstered or not, used or unused, pay a duty of \$57.90 each, besides octrio, etc. In the case of a high-priced carriage, with sumptuous furnishings, duty is assessed on value declared in invoice and bill of lading, and importers are advised to obtain an invoice from the Greek consul in the country from which shipment is made. In this latter case the duties are 20 per cent of assessed value, \$25 octroi, and 5 per cent on the 20 per cent.

Spreckles an Enthusiast—John D. Spreckles, the sugar king, is one of the most enthusiastic motorists on the Pacific coast. On one of his recent trips from San Francisco he had in his White steamer Miss Grace Spreckles and Mr. and Mrs. Wakefield Baker.

Active Consulate—It is reported that the Pittsburg consulate of the American Motor League has been doing good work in the smoky city in the way of working for highway improvement and getting after the miscreants who threw broken glass in the streets.

Bus for Servants—Mrs. George L. Carnegie has lately received at her winter home in the south a 1-ton Waverly electric truck arranged so that seats can be placed along the sides, turning it into a bus. It will be used for transporting her servants and supplies from the station to her winter home at Plum Orchard, Fernandina, Fla.

Ohio Roadmen Organize—At the good roads convention held at Toledo, O., last week a very excellent program was given. A permanent organization was formed with A. L. Spitzer as president, C. W. Shoemaker first vice-president, J. L. Pray second vice-president, J. W. Flowers secretary and R. A. Bartley treasurer. Vice-presidents were also selected for each one of the sixteen townships in the county. The organization will hold another meeting on November 11.

French Dissatisfied—It is reported from the continent that owing to the small amount of interest taken in the fall meetings held around Paris that it is likely that there will be a general reorganization of the program in the future. Chateau Thierry, Dourdan and Gaillon were promoted for the purpose of enabling makers to test their cars before exhibiting them in the Paris show. But all makers are not testing their new machines in this manner and the others object to meeting old cars in such competitions.



JOHN D. SPRECKLES, THE SUGAR KING, AN ARDENT AUTO MOBILIST



Takes on the Corbin-J. S. Bretz, while in Chicago, placed the agency for the Corbin car with the Bennett-Bird Co.

Dyke Resumes-The Phoenix Automobile Supply Co. has bought the stock of the Auto Exchange & Supply Co., of St. Louis, and will continue the business at 3939 Olive street. A. L. Dyke is the manager of the concern.

Howell Well Fixed-R. G. Howell, recently of the Harrolds Motor Car Co., of New York, has just been installed at the head of the Franklin department of the Decauville Automobile Co. He will have under him three assistants in addition to a Brooklyn representative.

Change of Name-George E. Hawley, formerly secretary of the Automobile Equipment Co., has purchased an active interest in the Gray Mfg. Co. of Detroit, and the name of the concern has been changed to the Gray-Hawley Mfg. Co. It will make mufflers, autochimes and marine whistles. A change in location has been found necessary and the plant is now at 605-9 Fort street.

Quaker Change—The property at the northeast corner of Broad and Race streets, Philadelphia, has been leased by Foss & Hughes, who recently acquired the agency for the Pierce and Cadillac machines for the Quaker City and vicinity. A large force of carpenters, painters and decorators is now at work beautifying the place, which is admirably adapted for the purpose, having good-sized fronts on both streets.

Clever Student-Edward Moore, of Newburgh, now a student at Syracuse university, has, it is reported, just received a check for \$5,200 for his invention of an improvement in a gas engine sparker. The new device switches the current which runs the sparker automatically when the gear lever is operated. This does away with an extra operation. Moore is a freshman. Before going to college he was, it is said, paid \$8,000 for a combined starter and regulator for electric motors.

New Concern-The Auto & Power Appliance Co., with offices at 357-359 The Arcade, Cleveland, O., has been recently organized for the purpose of manufacturing and marketing a line of motor vehicle parts and power appliances. The officers and directors of the company are all Cleveland men, as follows: E. L. Russell, president; J. A. Krider, vice president; F. C. Schneerer, secretary and treasurer; directors, J. Arthur House, F. A. Richards, E. L. Russell, F. C. Schneerer, J. A. Krider, G. F. Ball and C. E. Thompson. The company is in-corporated under the laws of Ohio, with a capital stock of \$200,000. This company has acquired the rights of manufacture from the Industrial Engineering Co. to a line of motor vehicle parts. In addition to manufacturing and marketing its own

apparatus, it is the purpose of this company to solicit contracts from other companies for the manufacture of motor ve-

Another Ohio Factory-The Lehr Agricultural Co., of Fremont, O., will have a new touring car of 20 horsepower on the market the first of the year, the company just recently deciding to go into the manufacture of automobiles.

Fahey Fixed-Ed Fahey, brother of Tom Fahey, of the Locomobile company, has been appointed to the direction of the Boston branch house of Continental tires. Fahey takes up his new work November 1. For the past year Fahey has been attached to the Hartford sales department of the Electric Vehicle Co.

On Demonstration Tour-George D. Wilcox, in charge of the car of the Gearless Transmission Co., of Glen Falls, N. Y., which is making a demonstration trip through the west, spent last week in Detroit, from which city he started out to go through Michigan to Chicago, Indianapolis, Columbus and Cleveland and then to New York. He expects to make the metropolis by November 20.

Parish Promotes-Robt. E. Jennings, of the Carpenter Steel Co., of Reading, Pa., will be president of the new company being organized for the purpose of manufacturing automobile frames made of nickel chrome steel. J. E. Sullivan will be one of the officers. The general manager is to be Neff E. Parish, organizer of the Parish & Bingham Co., of Cleveland. The name of the new company has not been decided on, but it will probably be the N. E. Parish Mfg. Co.

After New Store-The business done in Philadelphia during the past season by the local branch of Thomas B. Jeffery & Co. has demonstrated the inadequacy of the present quarters at 242 North Broad street. Manager W. F. Smith has been on the lookout for larger quarters for some time and is now dickering for a place which, if the negotiations go through, will give the Rambler the most palatial home on the row, it is claimed. Should the deal fall through, the present quarters will be enlarged and improved to the limit of their

Scots to Make Aster Motors-On top of the Darracq expansion as an assembling concern in England comes news of an arrangement between the Argyll company of Glasgow and Asters, the big French motor manufacturers, whereby the Scottish firm will manufacture motors for the English branch of the concern. The Argyll cars have been fitted with Aster engines for some years now and the arrangement is, no doubt, the outcome of initial confidence and satisfaction. Its underlying reason is probably a desire to get Aster goods on the colonial markets under the preference which is given to all British-made goods, besides which the colonial is averse to purchase foreign cars whose replacement will be difficult and take an exasperating length of time to obtain. How this arrangement with the Argyll concern fits in with the acquisition by Asters of 5



acres of land in the northwest suburbs of London for the ostensible purpose of erecting a factory to produce Aster motors is difficult to see.

Old Kirk Plant Sold-The automobile plant of the Kirk Mfg. Co., of Toledo, O., the property of which recently went into the hands of the Consolidated Mfg. Co., was last week sold to a Cleveland firm which will manufacture burial vaults.

Costly Button-It is declared that at Madison Square Garden there will be no wholesaling of trade tickets as at previous shows, and no coupon books. A badge or button will be given to employees of exhibitors when properly vouched for and additional buttons in case the original ones are lost will cost the unlucky one \$5 each.

After Duryea Plant-Efforts are making to induce the Duryea Co., of Reading, Pa., to establish a marine motor factory, garage and repair shop at Pleasantville, N. J. Since the opening of the new boulevard across the meadows to Atlantic City, about 5 miles distant, the Pleasantville board of trade has begun to realize that a big automobile plant would boom its town immensely. If the deal goes through the plant will be located on the new road.

Renault Models-C. A. Tileston, president of the company handling the Renault in America, has just returned from France, where he spent 1 year in the works of Renault Brothers at Billiancourt. He brings back with him the information that the models for 1906 will include a 20-30-horsepower and a 14-20horsepower four-cylinder machine, an 8horsepower and a 10-14-horsepower twocylinder cars, as well as a 40-50 horsepower model.

England's Second-Hand Trade - The extent of the second-hand trade done in the United Kingdom is indicated in the return of the business done by the motor house in Euston. It is certainly the largest of England's second-hand dealers, but that one firm should be able to turn over \$1,271,734.96 worth of second-hand motor cars in 12 months is indicative of the volume of business done. The number of cars sold was 1,897, so that the average price is easily seen to be low, but it will be lower next year, it is ex

Strict Show Rules-For the dealers attending the Madison Square garden show a new registry plan has been adopted which will enable them to visit the exposition without charge up to 11 o'clock each day, but which will prevent others from securing the same privilege. Upon entering the first day a dealer will be required to sign the registry book and also sign his name on the back of his card. To come in the next day he will have to again sign his name, which must be the same as the signature on the back of the card. The idea is to prevent other than legitimate dealers from securing special privileges at the big exhibition.

Durphy with Columbia—W. H. Durphy, formerly manager of the Boston branch of the Decauville company, is now located with the Columbia people of Hartford, it is reported from the east.

To Make Goggles—The Ophthalmuscope Co., of Toledo, O., which began manufacturing goggles for engineers and firemen about 2 years ago, has decided to equip a plant of its own at once. L. Bateman, manager of the concern, has decided to go into the manufacture of goggles for automobilists, two patterns having been gotten out.

Snap for Chauffeurs—The Banker Bros. Co., of Pittsburg, has decided to provide for the comfort of its chauffeurs by furnishing them with a big lounging room. On the second floor of the new addition a room has been fitted up for the use of all drivers connected with the garage. There will be a billiard table, an abundance of reading matter and pictures and plenty of comfortable lounging chairs.

A Franklin Test—A 1,000-mile test has just been completed by the H. H. Franklin Mfg. Co. One of its model G cars rated at 12 horsepower was used. On the trip the car carried, in addition to the driver, a baggage load of over 1,000 pounds. The test took place over a course from Syracuse to Albany, then to Boston via Pittsfield over the Peru mountains to Worcester, then from Boston to Providence, then to New York, thence up the Hudson to Peekskill and via the Cats-

kills home. No repairs or adjustments were made to the car en route, it is claimed by the demonstrators.

Baker Gets the Premier—S. H. Baker, for several years identified with the Boston branch of the Rambler company, has secured the local agency for the Premier and has organized a company.

In for Himself—Johnny Wells, formerly of the Philadelphia Rambler branch and later connected with the Packard and Autocar agency there, has embarked in an automobile livery business in the Quaker city.

The Franklin Outlook — The H. H. Franklin Mfg. Co., of Syracuse, N. Y., has, it is asserted, already contracted for one-half of its output for the coming season. The sales manager, C. Arthur Benjamin, is taking a trip through the New England states in the interest of the company. Several improvements are being made at the plant, among which are the erection of a lodge for employes and others who have occasion to enter and leave the works in an automobile.

Winton Changes Agents—As a result of the Winton exhibition car's trip through the country Charles Shanks has made some changes among the Winton representatives in the larger cities. In Buffalo the Winton is now handled by the Centaur Motor Car Co.; in Newark, N. J., the agency has been placed with C. S. Calvert; in Pittsburg the Standard Automobile Co. has been retained; in Indianapolis the Indiana Automobile Co. succeeds the Fisher Automobile Co. as sales agent in Indiana-

olis and southern Indiana; in St. Louis the Western Automobile Co. has taken the agency for the Winton for 1906.

Henry Moves Up—David W. Henry, of Buffalo, has been made general representative of the Electric Vehicle Co. Mr. Henry will continue to travel with the Columbia line of cars and is now preparing for a trip from New York to San Francisco. He will have charge of the traveling salesmen, routes and agents in the field and will spend the larger portion of his time in Hartford.

Cutting's Idea—Gen. John T. Cutting, the new representative of the Olds Motor Works in New York, has conceived and will put through on election day a novel and ambitious scheme in celebration of the fifth anniversary of the introduction of the Oldsmobile in New York. It will combine a run, a race meet and a luncheon, with the addition of a drawing for an Oldsmobile runabout by way of a souvenir. The main events will take place at Empire track.

Change in Buick Plans—At a meeting of the directors of the Buick Motor Co., of Flint, Mich., it was decided to change the plans for its new building so as to provide a main building 350 by 64 feet in ground dimensions, with an east wing 250 by 64 feet and a west wing 100 by 64 feet, the change being made with a view to furthering the lighting facilities of the structure. The work of constructing the tried as far into the winter as the weather will permit.

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Washington Statistics—Interesting details of the import and export trade in automobiles and parts during September and the nine months ending with September have been made public. The compilations show that ninety-seven cars, valued at \$349,622, and parts valued at \$21,652 were imported during September, while during the nine months ending with that month 295 cars, valued at \$1,065,458, and parts valued at \$68,753 were imported.

Chance in South Africa-Mail advices state that among the many interesting lectures given before the British association at Cape Town, South Africa, was one in the engineering section by A. T. Hennessy, chairman of the Automobile Club of South Africa. There is no question that there is an enormous future for motor ears in South Africa, both for pleasure and commercial purposes. In Cape Town alone during the last 2 years the number of cars in use has more than doubled. The old battle of the steam car as the competitor of the internal combustion engine was again brought up at the meeting referred to, Maurice Hely-Hutchinson, son of Governor Hutchinson, who has a 15horsepower White steamer, being a very strong advocate for steamers, but if wellposted automobilists are to be credited he does not know his South Africa sufficiently to realize the difficulties of water, to say nothing of the fact that what water 18 obtainable on the Karoo is usually so

brackish that it has a bad effect upon the steam pipes. Chairman Hennessy, Professor Hele-Shaw and most of those who have had any South African experience strongly favor the gasoline car and consider it should be specially built for local conditions, which means that the wheels should be fairly high to allow of ample clearance from the ground, to avoid bumping and also for purposes of crossing drifts. The cars should be geared low in order to cope with the numerous hills that abound in some sections.

Tip to Exporters-A number of decisions bearing on the automobile import trade of the Australian commonwealth have been made, as follows: Motor parts of automobiles, when imported with the car to which they belong, shall be classified as vehicles and parts, not elsewhere included in the tariff act, dutiable at 20 per cent ad valorem. Otherwise they will be treated as machinery and appliances, not elsewhere included, electric, at 121/2 per cent ad valorem. Rubber tires, when imported with the automobiles to which they belong, shall be classified as vehicles, not elsewhere included, and parts, not elsewhere included, dutiable at 20 per cent; otherwise as manufactures of india rubber, with 15 per cent duty. Accumulators, when an integral part of an engine for motor cycles, will be classified as machinery and appliances, not elsewhere included, electric, dutiable at 121/2 per cent. What They Want in India—The Belgian consul at Bombay calls attention to the extraordinary increase which has been taking place in the importation of automobiles into India. They are becoming more and more popular, particularly among the wealthy natives. In Bombay all types find a good sale, including luxuriously fitted coupes and victorias. The ordinary car seating four people is best in demand. Motor cycles are being introduced and seem likely to come rapidly into general use.

Swedes Take to Motoring-A French commercial adviser at Helsingfors, Sweden, reports that the use of automobiles has for some time past been increasing in the large towns of Sweden, such as Stockholm and Gothenburg, and that the present moment, when the fashionable world is evincing so much interest in the automobile, is a favorable one for attacking the market. Strong cars, moderate in price and with a simple but tasteful body, are suitable for the Swedish market. The cities offering the best opportunities are Stockholm and Gothenburg; then Malmo, which is a wealthy center. Norrkoping should not be neglected, as it is a rich town with excellent roads. As nearly all Swedish towns and villages are provided with electric stations, a good market could be found for electrics. Motor cycles have a good sale in the north of Sweden and Finland, consular reports show.



VIBRATOR TROUBLES

Chicago, Ill.-Editor Motor Age-While running along Drexel boulevard recently I observed a pile of dirt ahead of me in the darkness. Realizing that a slight bump would be there, I closed the throttle, retarded the spark and applied the brakes gently without releasing the clutch. On going over the dirt there was a slight bump. Almost immediately the enginedouble opposed-became sick and bumped along, not giving half its power. The motor was given gas, but no better results obtained; the coil was all right and so was the compression. A slight examination of the coil, however, revealed that one of the vibrators had stuck. A touch of the finger was sufficient to loosen it, when the motor at once regained all of its power. What caused the vibrator to stick to the end of the core? The same evening another driver stated that he had similar difficulties and was compelled to put several thicknesses of paper over the end of the core to prevent sticking of the vibrator. Can you give a reason for this and a better method of avoiding it?-R. P. C.

The armature sticks to the core because both are of material subject to magnetic attraction. If otherwise the spark coil would be an impossibility. Both are electro-magnets-that is, they are influenced only when the current is present. There is always some magnetism left when the current is off. This is called residual magnetism and with some grades of iron is greater than with others, often being sufficient to hold the armature to the core for some time. To prevent actual contact of the core and armature some makers cap the core with a brass ferrule; others have a stop, against which the armature strikes previously to coming in contact with the core. A piece of paper attached to the core with shellac will prevent contact, which is all that is necessary, as the residual magnetism is not of sufficient strength to hold the armature unless the parts are actually in contact. The experience is an impossibility, as with the armature on the core no spark would be produced, as will be shown. Referring to the drawing, A is the platinum-pointed adjustable contact screw, B is the vibrator and C is the core. When the circuit is closed the core attracts B and as B moves toward C the contact at the platinum points is broken. When this is broken the core C does not further exert an attraction on B and so B flies back and makes the contact, which reenergizes the core, pulls B and breaks the contact. These successive operations continue during the time the circuit breaker is in contact. The assumption is that B is stuck to C. Such being the case, the platinum

screw and the contact on the armature do not touch. These not being in contact, no current can possibly get to the coil, so of course a spark cannot be produced. In all vibrator coils the same principle is involved; that is, that the armature breaks the contact before it touches the core. If this were not the case the vibrator would be inoperative. It being the case, it follows that when the armature touches the core the circuit remains broken. In view of the fact it is difficult to see how the experience is possible, as with the armature on the core the motor would be dead. The solution probably lies in the fact that one cylinder only was working, the other being dead through a sticking vibrator.

AUXILIARY EXHAUSTS

Chattanooga, Tenn.-Editor Motor Age -In a recent issue of Motor Age, when the Franklin air-cooled automobile was described, an auxiliary exhaust was said to be used near the bottom of each cylinder. This port, according to the description, was placed 1/4 inch above the top of the piston when at the bottom of the stroke. I can't see how much of the exhaust will pass out through this opening, as it is uncovered by the piston walls for an exceptionally short period of time. The stroke of the engine is 31/4 inches and when running at 1,000 revolutions the piston travels 6,500 inches every minute, besides stopping at the top and bottom of the stroke 2,000 times. The auxiliary exhaust port is open only while the piston travels 1/4 inch on the down stroke, stops at the bottom and travels 1/4 inch up. What amount of gas can escape during this time? If a sufficient quantity does escape, I see no reason why the auxiliary exhaust would not be an excellent thing, but at present cannot see much practicability in it. At what rate of speed does the mixture travel when passing through the inlet valves in this machine, which are 1% inches in diameter and have a lift of 11-32 inch? The exhaust valves are the same size, and the auxiliary exhaust ports are 1 3-16 inches in diameter.-H. C.

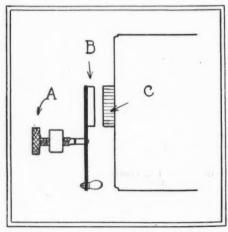
The velocity of gas through the auxiliary exhaust port would depend upon the pressure at the end of the stroke, which is variable, depending upon the mixture, compression and spark lead. The object is to take some of the heat away from the hot cylinder and incidentally this practically reduces the pressure on the exhaust valve to atmospheric pressure. Without going too deeply into the question it is sufficient to say that if this auxiliary exhaust port did not reduce the cylinder pressure to atmospheric pressure during its short time of opening, the two cycle engine would be an impossibility, as its inlet and exhaust are both controlled by

this means. Such speeds as 1,800 and 2,000 revolutions per minute are obtained from two cycle engines of the same bore as the Franklin and with but slightly larger exhaust port area than the Franklin auxiliary exhausts. If the pressure in the cylinder at the end of the stroke were not within 4 pounds of atmospheric no charge would enter and the motor would be inoperative.

INLET VALVE CONTROL

New Orleans, La.-Editor Motor Age-What are the advantages claimed for controlling the speed of a motor by the inlet Variation in some machines is valves? accomplished by having cone-shaped cams on the cam shaft, so that the amount of lift given the valves can be varied from the seat. In other machines the opening of the inlet valve is restricted by air pressure. In both of these styles the carbureter is not adjusted while driving the machine, a fixed adjustment being made when the carbureter is attached to the car. The spark is advanced and retarded. Other machines are made so that the action of the inlet valves is not variable, but the throttle and spark are the only controlling means. Which of these systems is the better and what are the advantages and disadvantages of each?-J. E. E.

The first two systems are quite similar. Regulating the inlet valve lift, by either mechanical means or air pressure, throttles the motor close to the cylinder. It is acknowledged that this is the most advantageous position for a throttle. The third method, carbureter throttling, has the disadvantage of a considerable volume between the point of throttling and the cylinder. The mechanical variable inlet gives a very smooth and flexible motor, provided the variable mechanisms for each inlet are so constructed and interconnected that for all positions each valve opens exactly the same. With the air pressure system each valve must open the same, as the air pressure tending to keep the valve seated is the same on each valve, and the suction is the same. The condition for each to open the same depends upon each inlet spring having equal tension, each valve and its piston having equal frictional resistance to its movement, and the inlet valve pistons must fit alike. The conditions in both of these cases are easily fulfilled by correct design and manufacture of the parts.



AN ORDINARY COIL VIBRATOR

LEGAL LIGHTS AND SIDELIGHTS



ALIBI UP TO OWNER

Judge Utley, in the central district court at Worcester, Mass., at the close of the hearing in the case of the commonwealth vs. Chester W. Bliss, charged with violation of the automobile speed law in Leicester, made a ruling that the government is not required to prove the identity of automobilists violating the speed law. He said that an automobile owner, who is accused of illegal speeding, and who claims he was not in the machine when the laws were violated, must prove an alibi to be acquitted. Counsel for the defendant asserted that Bliss was not in his machine, and that the owner is no more responsible for the violation of the speed law with his machine by other persons than is the owner of a horse, wagon or other vehicle. A fine of \$15 was imposed, but as Mr. Bliss was not in court, the sentence was postponed. In three other cases Contable Quinn was unable to identify the defendants as the alleged violators of the law, but the court imposed a fine of \$15 in each case.

ATLANTA HAS A LAW

Atlanta, Ga., adopted its automobile ordinance, has been adopted by the general council and it now goes to Mayor Woodward for his approval. The ordinance provides principally for a board of automobile examiners, which will pass upon all applicants for licenses. It also provides that all present licenses become void within 30 days after the approval of the measure. amendments were placed upon the ordinance, one by Councilman Quillian, providing that all licenses expire on June 30 of every year, and the other by Councilman Bruce, providing that no automobile be operated by anyone who is under the influence of intoxicants.

AMEND MOTOR CAR MEASURE

Kansas City's new automobile ordinance was passed by the upper house of the council last week, with a number of amendments that make it necessary to send the ordinance back to the lower house. Before the ordinance got through the upper house the lower house adjourned. There is little probability that the lower house will concur in the amendments. In that event a conference committee will be called for and the amendments will then be thrashed over again. The amendments adopted by the upper house were briefly as follows:

Sections 3 and 4, providing for the licensand examination of chauffeurs, were

stricken out entirely.

That part of section 6 providing for the revocation of the license on the second conviction of violation of the ordinance was stricken out.

The eastern limit of the district in which

the speed is limited to 8 miles an hour is extended from Troost avenue to Woodland avenue. The other limits of the district are the Missouri river, Eighteenth street and the state line. On the boulevards and else-where in the city the speed is restricted to 12 miles an hour.

On approaching and turning into inter-secting streets the speed must be reduced to

4 miles an hour Operators are not required to sound their horns on meeting vehicles coming towards them. It is required only on approaching vehicles from the rear.

The amendment eliminating the examination of chauffeurs was recommended by Aldermen Jewett and Woodson of the judiciary committee, who gave a hearing to the attorney and two members of the automobile club. The representatives of the club were willing to concede the changes in the speed regulations in return for the striking out of the license and examination sections. The machines themselves are subject to a vehicle tax under another ordinance. Alderman Sloan alone voted against this change.

TIMELY SUGGESTIONS MADE

Probably the most important announcement ever made affecting the interests of Washington automobilists was issued this week, when District Commissioner West, who has immediate supervision of the automobile regulations, informed President Duvall, of the Automobile Club of Washington, that it was the intention of the municipal authorities in the future to submit to the club all proposed amendments to the regulations, in order to obtain the views of those directly affected by any new regulations. This pleasing proposition of Commissioner West was brought about by a communication from H. C. Hunter, a member of the club, who suggested the advisability of incorporating in the local regulations a provision similar to that in force in New Jersey, making it a misdemeanor for any one, without the consent of the owner, to operate an automobile in the public streets and other places. Commissioner West thought this clause in the New Jersey law rather sweeping, and sent it to President Duvall with the request that the club should express its views on the subject. President Duvall, who is a lawyer, gave the matter careful consideration and finally proposed a substitute to the New Jersey clause as suggested by Mr. Hunter, to the effect that "any person who operates a car on the streets in the absence of the owner and without the written consent of the latter shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than \$100 or more than \$500, or imprisonment for 1 year, or both. Provided, that nothing in this statute shall be construed to prohibit the delivery of automobiles to points desired by the owner, or the return of machines from any point to the garage where same are stored, by a regularly licensed operator connected with said garage, provided that such delivery or return shall be accomplished by the shortest practicable route."

President Duvall set forth at length the wisdom of adopting the proposed regulation, and he likewise asked in behalf of the club that a regulation be adopted imposing a fine of from \$50 to \$500 upon any person willfully tampering with or destroying or damaging any part of an automobile, or taking away any of the lamps or parts of any automobile left temporarily on the streets or elsewhere.

The club is desirous of having a new police regulation enacted whereby heavy punishment can be inflicted upon persons who throw stones or sticks at passing This is an evil that is automobilists. growing in Washington and unless curbed by the police it will eventually lead to serious accidents. Still another evil that has caused much expense to automobilists is the habit of many persons throwing glass and other sharp substances on the streets

CLAIMS CONFLICT OF LAWS

A test case is being made at Providence, R. I., of the law regulating the speed of automobiles. Philip E. Eddy, whose country house is at Rumstick Point, on Narragansett Bay, was tried recently in the district court at Warren for exceeding the speed limit of the town of Barrington last Sunday. John G. Aldrich pleaded guilty and paid his fine. Mr. Eddy didn't. R. B. Comstock, of Providence, counsel for Mr. Eddy, claimed that the ordinance regulating the limit of speed at 15 miles an hour conflicted with the general laws, and therefore Mr. Eddy committed no infraction. It was claimed that the town had a right to make an ordinance regulating the speed of automobiles without the compact part of the town, but no power to make an order regulating the speed within the compact part of the town, as that is regulated by the statutes. Judge Bosworth, reviewing the claims set up by counsel for the defendant, said that there appeared to be no compact section in the town of Barrington; that it was an open country and unlike Bristol or Warren.

DRUNKS BEWARE

With a view of getting after drunken chauffeurs and automobilists, State Senator Wood McKee has already drawn a bill for the next session of the New Jersey legislature, which will impose a fine of \$1,000 on automobilists who may be arrested in an intoxicated condition. Senator McKee explains that he is inspired by the several automobile accidents of the past when a number of people lost their lives, through the carelessness of drunken automobile drivers. He wants the law so severe that drunken men will keep out of the machines, especially chauffeurs who take their owners' machines and wreck them. The bill reads:

"Any man in a drunken condition driving an automobile will be liable to summary arrest without warrant and will be liable to indictment and compelled to furnish bonds to guarantee his appearance when wanted. Should he be convicted the presiding judge will have power to send him to state prison not exceeding 3 years or impose a fine of \$1,000 of both."

Current Automobile Patents



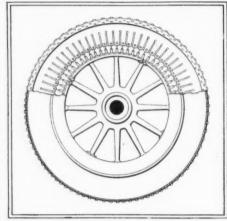
Boat Automobile-No. 802,852, ber 24; to Edward Fournier, of North Yak-ima, Wash.—The inventor has a combined automobile and motor boat, the combination being such that should a portage have to be made, axles and road wheels can be quickly attached and the rudder and pro-peller removed. In case of traveling in peller removed. In case of traveling in water the road wheels are readily detachable and the rudder and propeller fitted in place; the propeller shaft from the gear case, being jointed, can easily be connected either with the propeller for marine use or the center of the rear axle for land traveling.

French Wood Tire—No. 802,746, dated October 24; to Auguste A. Gilles, of Nogent sur Marine, France—The inventor's wood tire forms part of the rim of any automobile wheel. On either side of the rim is a ring-like part made up of sections pivoted together at adjacent ends and with legs at the ends extending into sockets in the rim. The legs are bored, forming cylindrical seats, in which are placed coil springs for resisting jar. Between these two rings are block pieces composed of wood or any other material. These blocks are retained between the rings composed of the sections referred to and are free to move up and down as the

Four-Wheel Drive-No. 802,442, dated October 24; to John A. Carr. of D. Tour-wheel Drive—No. 802,442, dated October 24; to John A. Cary, of Denver, Colo.—The inventor has an automobile construction in which all four wheels of the car are used in driving. The motor is carried in any desirable position and drives to the axles through drive shafts that have journals in the framing of the violet. The front axis the framing of the vehicle. The front axle is of the pivotal type, steering knuckles not being used, and steering is through a steering wheel, a bevel gear on the bottom of the steering column driving a horizontal worm

that works in a toothed quadrant in the frame.

Tire Covering—No. 802,735, dated October 24; to Pierre O. Casavant, of Point St. Charles, Quebec—The inventor's cover for pneumatic tires is a chrome leather casing with a reinforced tread, consisting of an extra strip around the tread, of chrome leather, and in this strip are two or three series of heavy rivets with broad heads. The edges of the cover are serrated, long lips extending radially covering the sides of the extending radially covering the sides of the tire. Just slightly nearer the center than the ring formed by the ends of the lips is



CASAVANT'S TIRE COVER

a linked chain, not continuous but made up of four or five sections. To the links of this chain are attached the outer ends of hooks that engage with the inner ends of the teeth or lips on the cover. When tight-ening the cover in place the turnbuckles holding the several sections of the chain to-gether are tightened, clamping the whole cover firmly in place.

Lamp Support—No. 802,846, dated October 24: to Josepr L. De Good, of Detroit, Mich.—The invention is a swiveled support for carrying the head and search lights of an automobile so that they will be turned in unison with the front wheels, the object of the invention being the lighting of the road directly in front of the automobile when turning corners. The lights are connected or supported on brackets, connected by rods with the tie rod between the steering knuckles.

Spring Wheel—No. 802,643, dated October 24; to Charles E. Huxley, of Chicago—The spring wheel described has a sectional rim, the sections being of length to reach from the end of one spoke to the end of the next where they are pivoted together and the spoke attached to one of the sections close to the pivot. The spokes consist of two tubular parts, one of large diameter attached to the hub and extending three-quarters of the distance to the rim and the other parts. the distance to the rim, and the other part attached to the rim of less diameter, being within the larger part, the two parts being as a piston within a cylinder.

Gas Tire Inflator—No. 802,905, dated October 24; to Gabriel A. Borbick, of Los Angeles, Cal.—The invention relates to a method of inflating pneumatic tires, other than that by pump pressure. On the back part of the automobile, beneath the frame, is a cylindrical transportations. cal tank containing liquid carbon dioxide, and in conjunction is a water tank, by means of which the former compound can be made to give off gas. On the tank is a reducing valve attached to a flexible tube connecting the tire valves. In the tank containing the liquid carbon dioxide is space for the accumulation of gas, so that a pressure head can be obtained before starting inflation.

can be obtained before starting inflation.

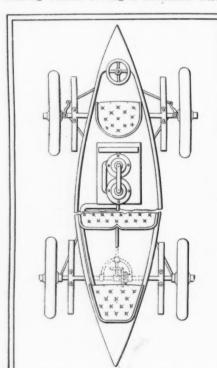
Gabriel's Horn—No. 802,386, dated October
24: to Claud H. Foster, of Cleveland, O.—

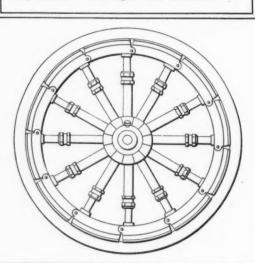
The invention referred to is the Gabriel horn, now used on motor cars. The horn consists of three parallel tubes, similar in construction to organ pipes, with a reed in each.

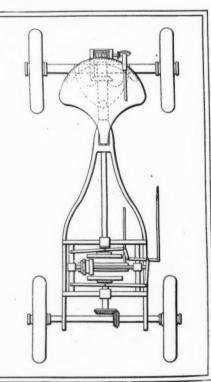
The tubes, or horns, are connected with the muffler pipe, so that part of the exhaust can be directed into the horn whenever de-Arrangements between the horn and the exhaust pipe are such that when the exhaust pressure varies the horn produces a uniform musical sound.

uniform musical sound.

Leather Tire Covering—No. 802,600, dated October 24; to Oliver D. Salisbury, of Owosso, Mich.—The pneumatic tire described has an inner air chamber and an outer casing made of leather. The outer casing has its edges adjacent to the wheel rim turned outward and holes in them for attachment to the rim. Beneath the tire is a bed strip on which it rests. This strip projects on either side beyond the rim of the wheel and has holes corresponding with those in the edges of the casing through which pass radial bolts secured to a metal ring encircling dial bolts secured to a metal ring encircling the wood rim.







PUNCTURE DETHRONES A KING



THIS is a kingly tale, a romantic sort of a recital of the woes of a monarch and how a revolution was decided on an island in the South Seas by the bursting of a rear tire on an automobile, which encompasses the downfall of a ruler of a dusky tribe of New Zealanders. While the story teller is no Richard Harding Davis, he is not half bad as a spinner of yarns and reels off his tale with a fluency that gives it a semblance of truth. As to whether or not he can back up his story with facts, that is not required of him. If it was, he could, no doubt, prove what he says by taking a map of New Zealand and pointing out exactly the location of the isle in question. That should be enough to satisfy the most exacting-particularly if the doubter is anxious to hear a good story. The man who stands sponsor for all that is to follow is credited with being a salesman for an automobile firm sent to the antipodes to work up trade there for American cars. He is not overanxious to divulge his identity. According to him, he went to New Zealand after a month's stay in Australia and while there made the acquaintance of the American consul at Auckland and was induced by the latter to go to Barren island, which is between Tasmania and New Zealand. The American consul accompanied him. The scenery of Barren island is the antithesis of its name and the Yankee consul promised that a trip in the automobile through the island would not prove a waste of time.

When the salesman and the consul arrived by steamer, which touches the island every 2 weeks, they found the country to be in the throes of a revolution. There was but one representative of British authority on the island, the steamship agent, and he cared little for the social and political problems with which the aborigines were wrestling, provided they permitted him to sit, elad in his duck suit, under an awning and enjoy his pipe in peace.

"The kin question," said the automobile drummer telling the story, "was the cause of the agitation, showing that the dusky-hued people differ but little from their white brothers. The half-clad king, who was well along in years, was at war in a small way with his only son who had recently come of age and who, in establishing his harem, had raided his father's enclosure and carried off three of the most baxom houris owned by the old man.

"Naturally the old gentleman was incensed at this purloining of his property, and with warriors, numbering about 150, had chased the son into a jungle. So hasty was his flight that he was forced to abandon his lares and penates and necessary attachments, including his harem. The old man in revenge made a clean sweep and took all of his son's portable possessions, including the aforesaid harem, to him own domicile.

"Considerable surprise was expressed by the natives at the gasoline automobile. They took to their heels when the monster came in sight and viewed it only from a safe distance. The only thing of a mechanical nature they had ever seen was the steamship."

Through the medium of the passive steamship clerk the salesman made the acquaintance of the son of the ruler who had left his jungle and had taken refuge in the little storehouse of the steamship company. The son and heir was induced to ride in the automobile under promise of protection from the wrath of his sire.

"Well, sir," said the American in telling his tale, "the few hundred natives on the island were so taken with this demonstration of courage by their ruler's son that they put it up to the old man good and strong. They said in effect that if he was afraid to ride in the automobile

he would have to relinquish not only his war club but his assortment of wives.

"The old gent kicked considerably, but finally climbed into the rear seat of the machine. He was trembling and was as white as any black man could possibly get. I pushed the lever well forward and put on the second speed. I soon increased this to the third speed and pushed the throttle well forward.

"We were tearing along the beach before the populace of the whole island, who were scantily clothed, at a rate of 30 miles an hour, the old chief hanging on for dear life, when a rear tire burst.

"When I picked myself up 20 feet away I looked for the car and saw that it had run into the surf and was a total wreck. The next sight of interest that met my gaze was the old chief doubled up on the sand lying as still as a petrified log. He was clad only in his dignity, his few clothes having been torn from his body. Sea water administered externally in plentiful doses soon restored him to a painful memory of what had happened. was no doubting as to who was the real king on the island after that. The people looked upon the accident as a demonstration of the wrath of their gods toward the old ruler and he was a back number thereafter. His son was compassionate and permitted him to remove his hut to the other side of the island. The old man, though, was forced to leave all his valued possessions behind, not even an houri being permitted to accompany him and do his cooking. It was an awful come-down for the ex-king, who can blame his downfall solely to the automobile, or rather to the tire. Had the old boy stood on his dignity he could not have done worse and would not have been branded as being on the bad books of the native gods. It was hard luck, I'll admit, but the son beat father to it in getting into the band wagon of modern progress, so he reaped the fruits of his daring in taking advantage of my offer. I took the next ship for Hobart, Tasmania, where I awaited the arrival of a sample machine from Melbourne, Australia, our nearest agency. If anybody asks you, just tell them I've had enough of the king business."



BRIEF BUSINESS ANNOUNCEMENTS

Sag Harbor, N. Y .- Liveryman A. K. Rogers is to sell his horses and open an automobile garage.

New York City-W. Irving Fickling, manager of the Auto Top & Cover Co., has been appointed agent for the Neuiport spark plugs and coils.

Detroit, Mich.-May & Wills, in the garage business at 11-13 Abbott street, have dissolved partnership. The business will be continued by David J. May.

Detroit, Mich.-W. C. Orell and Clark C. Hyatt have been appointed general agents for the Buick in Great Britain and Ireland. They will make their headquarters in London.

Troy, N. Y .- The Troy Automobile Exchange has testified to the secretary of state that the amount of its capital stock has been increased from \$5,000 to \$50,000, consisting of shares of \$100 each.

Newport, R. I .- A repair shop at 86-88 John street has been opened by B. Morgan, who intends to carry on the manufacture of his patented single-piece inlet valves, as well as a general repair busi-

Austin, Tex .- The Torreon Rubber Mfg. Co. has been incorporated lately with headquarters at Austin. The company is not a new one, but has already been supplying rubber to Germany and is now ready to extend the business.

Akron, O .- The Diamond Rubber Co. has increased its capital stock from \$750,-000 to \$3,000,000. It is stated that the company will shortly make important additions to its plant in order to take care of the increasing demand for its goods.

Indianapolis, Ind .- The Fischer Automobile Co, has announced that it will handle several unlicensed makes of automobiles. It has the agencies for the Pope-Toledo, Oldsmobile and Winton, and in addition has arranged to handle the Premier, Maxwell, Stoddard-Dayton and the National in 1906.

Havana, Cuba-George Vernon Rogers, secretary of the Mitchell Motor Co., of Racine, Wis., recently spent some time in this city looking out for the interests of his company. The Havana agency for this concern has been turned over to the West Indies Transportation Co., of which Mr. Barnhardt is the manager.

Omaha, Neb .- T. M. Bromwell, for 2 years sales manager of the Rambler Automobile Co. of this city, has become vicepresident and general manager of the Deright Co., which has been recently incorporated for \$50,000, with J. J. Deright for president. The new company will begin operations about December 1.

New Albany, Ind .- The E. C. Walker Co. has sold a half interest in its business to E. C. Jacobson, of Louisville, Ky., and has erected a large factory at 1921-1923 Logan street, that city, where the company will continue the business of manufacturing the component parts of a steam car. In addition to this it will also manufacture a pneumatic shock absorber and a dust deflector.

Cleveland, O .- A. A. Stearns has placed contracts for the erection of a fine automobile garage at 401 Rosedale avenue.

South Bend, Ind .- The Tritt Electrical Mfg. Co. has removed to Union City, Ind., and is now established in the factory formerly occupied by the Union Automobile Co. in that city.

Toledo, O .- The Antler Stable Co., 120 Twenty-second street, has increased its capital stock from \$25,000 to \$50,000 and has changed its name to the Antler Stable & Garage Co.

Saratoga Springs, N. Y .- J. A. P. Ketchum has broken ground for a new garage to be built on South Broadway, south of Convention hall. The building is to cost \$35,000.

Atlantic City, N. J .- Andrew P. Johnson is to erect an automobile garage that will cost \$125,000 at 11 North Ohio avenue. Ground has been broken for the building and it is to accommodate fifty machines.

Detroit, Mich.-The Hayes Mfg. Co. expects to move into its new building early in November. Two brick buildings are being erected. E. A. Carpenter, until recently superintendent of the finishing department of the Packard Motor Car Co., has charge of the company.

Hammondsport, N. Y .- G. H. Curtiss is considering the removal of his factory to Rochester, where he will engage in the manufacture of his own motors. Until now they have been made by the Kirkham Motor Works, in Bath. The employees will be doubled and the factory considerably enlarged.

LATE INCORPORATIONS

Albany, N. Y.—The Automobile Supply Co. has been incorporated with a capital stock of \$40,000.

Sharon, Mass.—The Tudor Farm Motor Car Co, has been incorporated with a capital stock of \$15,000.

Columbus, Ohio—The Commercial Motor Trust Co. of Toledo has been incorporated with a capital stock of \$20,000.

Trenton, N. J.—The Automobile Speedway Co. of New Jersey has been incorporated with a capital stock of \$100,000.

New York—The Columbus Auto Exchange and Storage Co. of New York has been incorporated with a capital stock of \$1,000.

New York City—The Alborak Auto C has been incorporated with a capital stor of \$3,000. It will manufacture automobiles.

Hammondsport, N. Y.—The G. H. Curtiss
Manufacturing Co. has been incorporated
with a capital stock of \$40,000. The company
will engage in the manufacture of motors will engage in t

ndd motor cycles.

New York City—The Columbus Auto Exchange & Storage Co. has been incorporated with a capital stock of \$1,000. The company is to maintain an automobile garage.

Albany, N. Y.—The Albany Garage Co. has been incorporated for the purpose of manufacturing, selling and storing horseless vehicles. The capital stock of the company is \$50,000.

Aurora, III.—Articles of incorporation have been filed for the Practical Auto Co. with a capital stock of \$100,000. The company will engage in the automobile manufacturing

New Brunswick, N. J.—The Middlesex Motor Co. of 95-99 New street has been incorporated with a capital stock of \$50,000. It will manufacture automobiles, bicycles, bicycle parts and motor cars, etc.

Kansas City, Mo .- The Buick Motor Car Co., which will handle the Buick ex clusively in Kansas, has moved to it new garage at Fifteenth street and Vicginia avenue.

Lansing, Mich.-The Olds Motor Workhas just shipped the first consignment of cars to its Paris agency. In the lot were seventy-five cars-four-cylinder, two-cylinder and runabouts.

Detroit, Mich.-The American Electromobile Co., with offices in the Penobscot building, is negotiating for a site on which to erect a factory for the manufacture of automobiles.

Pittsburg, Pa .- A two-story and basement building is to be erected by the Atlas Automobile Co. The building is to cost about \$35,000 and will have accommodations for about 300 cars.

Kansas City-The Strang Electric-Gasoline Car Co., incorporated for \$100,000, with A. F. Hunt, Jr., of New York as the leading stockholder, will build a combination gasoline-electric motor that can be used in commercial vehicles.

Cleveland, O .- The Standard Automobile Co., of Cleveland, has been formed with \$10,000 capital stock by George H. Smith, F. B. Williams, M. G. McAlleman and George H. Kelley. The company will handle and repair automobiles.

Boston, Mass.-C. S. Henshaw, New England represenative for the Thomas Flyer has closed with W. L. Wilcox at Fall River, Mass., and has renewed contracts with George J. Donahue, of Brockton, Mass., and the Reichert Automobile Station, of New Haven, Conn.

Cleveland, O .- The Brew & Hatcher Co., of Cleveland, which for several years past has conducted a factory for the manufacture of automobile parts and special material to order, has been succeeded by the Hatcher Auto Parts Co., Mr. Brew having retired from the company.

South Bend, Ind .- The W. L. Casaday Mfg. Co. has about concluded to drop automobile manufacturing and devote its efforts to the development of stationary gasoline engines. Mr. Cleveland, until recently manager of the company, has gone to California with the intention of taking up his residence there.

Kansas City, Mo .- Articles of incorporation of the Strang Electric-Gasoline Car Co. were filed with the county recorder. The capital stock of the company is \$100,000. The company has patented a combination electric-gasoline motor power that can be employed in the moving of any class of vehicle designed to carry freight or passengers.

Muncie, Ind .- The new manufacturing company, to be known as the Muncie Auto Parts Co., has been organized with a capital stock of \$15,000. The company is to make automobiles and automobile ma-chinery of all kinds. It is expected that the manufacture of steering apparatus will be begun in a few weeks. Hugh L. Warner is to be the superintendent of the plant when it starts.



MORE STATE DIVISIONS

This week the division of six more states into districts is announced. The work of electing representatives from these districts to compose state boards of officers will be taken up during November, and the delegates to the national assembly will be elected in time for the February meeting, when the active work of the league will be extended in all directions. The divisions are as follows:

MISSOURI DIVISION

District 1, county of St. Louis; district 2, counties of Jefferson, Francois, Sainte Genevieve and Perry; district 3, counties of Madison, Wayne, Bollinger, Cape Girardeau and Scott; district 4, counties of Butler, Stoddard, Mississippi, New Madrid, Dunklin and Pemiscot; district 5, counties of Ripley, Oregon, Shannon, Carter, Reynolds, Iron and Dent; district 6, counties of Washington, Crawford and Phelps; district 7, counties of Franklin, St. Charles, Warren, Montgomery and Lincoln; district 8, counties of Audrain, Pike, Monroe and Rails; district 9, counties of Shelby, Marion, Lewis, Knox, Clark and Scotland; district 10, counties of Macon, Adair, Schuyler, Putnam, Sullivan, Mercer, Grundy, Linn and Livingston; district 11, counties of Randolph, Howard, Saline, Chariton and Carroll; district 12, counties of Boone, Callaway, Cole, Osage, Maries and Gasconade; district 13, counties of Miller, Pulaski, LaClede, Dallas, Hickory and Camden; district 14, counties of Texas, Howell, Ozark, Douglas, Wright, and Webster; district 15, counties of Taney, Christian, Stone, Barry, Lawrence, Newton and McDonald; district 16, counties of Greene, Polk, Cedar, Dade, Jasper, Barton and Vernon; district 17, counties of Saint Clair, Bate, Henry, Johnson and Cass; district 18, counties of Benton, Morgan, Moniteau, Cooper and Pettis; district 19, counties of Lafayette, Jackson, Ray, Clay, Platte, Buchanan, Clinton and Caldwell; district 20, counties of Daviess, De-Kalb, Andrew, Holt, Atchison, Nodaway, Worth, Gentry and Harrison.

ILLINOIS DIVISION

District 1, county of Cook; district 2, counties of McHenry, Winnebago, Boone and Lake; district 3, counties of Jo Daviess, Stephenson, Ogle and Whiteside; district 4, counties of Lee, DeKalb, Kane, Kendall and Dupage; district 5, counties of Will, Kankakee and Grundy; district 6, counties of Bureau, Lasalle, Putnam, Marshall, Woodford, Peoria and Stark; district 7, counties of Henry, Knox, Warren, Henderson, Mercer and Rock Island:

district 8, counties of Fulton, McDonough, Schuyler, Adams and Hancock; district 9, counties of Tazewell, Logan, Sangamon, Menard and Mason; district 10, counties of Livingston, Ford, DeWitt and McLean; district 11, counties of Iroquois, Vermilion and Champaign; district 12, counties of Edgar, Clark, Cumberland, Coles, Douglas, Mouldrie, Piatt and Macon; district 13, counties of Shelby, Christian, Montgomery and Macoupin; district 14, counties of Cass, Morgan, Greene, Jersey, Calhoun, Scott, Pike and Brown; district 15, counties of Madison, Bond, Clinton, Washington, Randolph, Monroe and St. Clair; district 16, counties of Fayette, Effingham, Jasper, Crawford, Lawrence, Richland, Clay, Marion, Jefferson, Wayne, Edwards and Wabash; district 17, counties of White, Hamilton, Gallatin, Saline, Hardin, Pope, Massac, Pulaski, Alexander, Johnson, Union, Williamson, Jackson, Franklin and Perry.

MINNESOTA DIVISION

District 1, county of Ramsey; district 2, county of Hennepin; district 3, counties of Dakota, Goodhue and Wabasha; district 4, counties of Dodge, Olmsted, Winona, Houston, Fillmore and Mawer; district 5, counties of Steele, Freeborn, Faribault, Blue Earth and Waseca; district 6, counties of Rice, Lesueur and Scott: district 7, counties of Nicollet, Sibley, Carver and McLeod; district 8, counties of Martin, Watonwah, Cottonwood, Jackson, Nobles, Murray, Pipestone and Rock; district 9, counties of Brown, Redwood and Renville; district 10, counties of Lyon, Lincoln, Yellow Medicine, Lac Quiparle, Chippewa and Swift; district 11, counties of Kandiyohi, Meeker, Wright and Stearns; district 12, counties of Anoka, Sherburne, Isanti, Benton, Mille Lacs and Kenabec; district 13, counties of Washington and Chisago; district 14, counties of Pine, Carlton, St. Louis, Lake and Cook; district 15, counties of Todd, Morrison, Wadena, Hubbard, Cass, Crow Wing, Aitkin and Itasca; district 16, counties of Big Stone, Traverse, Stevens, Pope, Douglas, Grant, Wilkin, Otter Tail, Clay and Becker; district 17, counties of Beltrami, Norman, Polk, Red Lake, Marshall, Roseau and Kittson.

WISCONSIN DIVISION

District 1, county of Milwaukee; district 2, counties of Racine, Kenosha, Walworth and Rock; district 3, counties of Waukesha and Jefferson; district 4, counties of Ozaukee, Washington and Sheboygan; district 5, counties of Dodge, Fond du Lac, Winnebago and Calumet; district

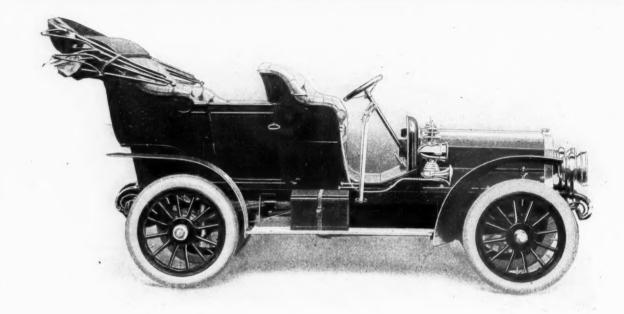
6, counties of Manitowoe, Kewaunee, Door and Brown; district 7, counties of Green Lake, Waushara, Marquette, Outagamie, Waupaca, Portage and Wood; district 8, counties of Adams, Juneau, Sauk, Vernon, Monroe and Le Crosse; district 9, counties of Columbia, Dane and Green; district 10, counties of Iowa, Lafayette, Grant, Richland and Crawford; district 11, counties of Clark, Jackson, Trempeauleau, Buffalo, Eau Claire, Pierce, Dunn and St. Croix; district 12, counties of Florence, Marinette, Oconto, Shawano, Anglade and Marathon; district 13, counties of Forest, Lincoln, Oneida, Vilas, Price, Iron and Ashland; district 14, counties of Taylor, Chippewa, Sawyer, Bayfield, Douglas, Washburn, Barron, Polk and Burnett.

IOWA DIVISION

District 1, counties of Allamakee, Clayton, Fayette and Winneshiek; district 2, counties of Dubuque, Jackson, Jones and Delaware; district 3, counties of Clinton, Scott, Muscatine and Cedar; district 4, counties of Louisa, Des Moines, Lee and Henry; district 5, counties of Jefferson, Van Buren, Davis, Wapello, Appanoôse and Monroe; district 6, counties of Keokuk, Washington, Johnson, Iowa, Poweshiek, Tama, Benton and Linn; district 7, counties of Bremer, Blackhawk, Grundy, Butler, Franklin and Hardin; district 8, counties of Chickasaw, Howard, Mitchell, Floyd, Cerro Gordo and Worth; district 9, counties of Hancock, Winnebago, Kossuth, Emmet and Palo Alto; district 10, counties of Wright, Hamilton, Humboldt, Webster, Calhoun and Pocahontas; district 11, counties of Marshall, Jasper, Mahaska, Marion, Warren, Pork and Story; district 12, counties of Lucas, Wayne, Clarke, Decatur, Union and Ringgold; district 13, counties of Boone, Dallas, Madison, Adair, Guthrie, Audubon, Greene and Cairo; district 14, counties of Adams, Taylor, Page, Montgomery, Mill and Fremont.

HOW TO BECOME A MEMBER

The American Motor League invites to its ranks all motor car users of good moral character and all persons who favor the use and development of the automobile. The league does everything possible to put forward the safe and sane use of the motor car and aims to secure better roads, the publication of correct road maps, the erection of guide boards and danger signs and to perform other useful works in behalf of automobiling. The dues are nominal—\$2 per year. There is no initiation fee. Full particulars will be sent on postal card request. Address F. A. Egan, secretary, New York city.



Why Ground Parts Reduce Upkeep Expenses

week we emphasized the vital importance of | GROUND Cylinders and Pistons.

But we can't stop there.

To reduce friction, wear, waste and Expense, every working part must be GROUND.

A Ground part has the smoothness of plate glass and is always Absolutely Round.

A part not ground has rough spots and streaks like common window glass and is never perfectly round. Any bearing not Perfectly Round is a Bad bearing.

Move one unground part against another and the result is excessive friction and wear.

Unground parts in an automobile mean many Repairs, Replacements and Expense Bills. And the friction they create cannot be prevented by lubrication. You can flood such bearings with oil, but the Friction and Wear and Waste goes on just the same.

And that friction uses up part of the motor power which should be used in Driving the Car. That's Waste.

Consequently, it costs much more to run an automobile whose parts are not ground.

Also there are more repairs, and you get less mileage.

And when parts are not ground, they are likely to stick and bind, when least expected, and that may mean that you must leave your car out on the road until it can be towed home.

All motor car builders know this.

But those who use soft metal can't grind their parts. Because grains of emery would become imbedded in the metal and cut it (when the engine runs) worse than if not ground.

And cheap cars have no ground parts because grinding

costs money and adds to manufacturing expense.

So, when you buy a car with ALL Working Parts GROUND, you are certain that the metal is hard and substantial and that the maker doesn't cheapen his car to save expense in manufacture.

In the new Winton MODEL K Every Working Part is GROUND.

Further still, all parts (where experience has shown it to be desirable) are both HARDENED and GROUND.

That means that in buying the Winton MODEL K, you buy greatest mileage, most serviceable machinery, a car whose power is not wasted, and one that can be run all the time at the least possible EXPENSE PER MILE.

WINTON MODEL K—Four cylinder, vertical, water-cooled; 4%-in. bore; 5-in. stroke. Individual clutch transmission. Winton Air Governor. Winton Twin Springs. Lubrication, Ignition and Carburization simple and positive. \$2500 f. o. b. Cleveland. "The typical American motor car."—American motor car."—Americanized Encyclopaedia Britannica.

MOTOR CARRIAGE WINTON THE

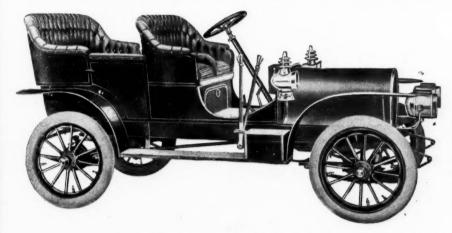
CLEVELAND, OHIO, U. S. A.

MEMBER A.L.A.M.

Winton Transcontinental Exposition now en route to the Pacific Coast

CATALOG NO. 2 IS READY

FRANKLIN-



Type G

4-Cylinder Light Touring Car

Air-cooled. Shaft drive, Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. Four or five passengers. Side doors, 88-inch wheel base. 12 "Franklin horse-power." 1400 pounds. 35 miles per hour. Full head and tail-light equipment. \$1800, F. O. B. factory.

"What Will It Do?" There's the Whole Question

This car carries its full load 30 to 35 miles an hour regularly on the road under actual conditions.

The intermediate gear is amply powerful for very bad hills.

The car is strong, roomy, comfortable—even luxurious, and extremely economical.

No other car will do so much work on so small an amount of gasoline and oil.

It is of the most perfect construction and made in every part of the highest-grade materials possible to put into a motor car, no matter what the size, rating or price.

It does all that any 20 horse-power car - except a Franklin - will do; and more than most 30 horse-power cars.

"Why then, do we not rate it higher?"

Because it is 12 "Franklin horse-power." We must be honest with you."

But we must be honest to the car; and we will tell you that "Franklin horse-power" means more and does more — far more than anywhere near that rating in any other car. If you forget this fact you are liable to cheat yourself.

Send for the book and you will understand it better. Ride in the car once and you will be certain of it.

4 Models for 1906

Type E. Four-cylinder Runabout or Gentleman's Roadster.
Type G. Four-cylinder Light Touring Car.
Type D. Four-cylinder Touring Car.
Type H. Six-cylinder Touring Car.

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Members A. L. A. M.

"The Motor Car of the Future"

WE HAVE COMMENCED DAILY DELIVERY OF

MITCHELL

CARS F O R 1906

Runabout

Model 28, 2-cylinder, 8 horsepower, vertical motor, \$750

Touring Car

Model 4B 4-cylinder \$1500

OUR 1906 PRODUCT WILL ALSO INCLUDE A NEW LINE OF COMMERCIAL CARS AND TWO OTHER MODELS SOON TO BE ANNOUNCED

The racy lines and aristocratic appearance of the Mitchell has made it tirst among cars "Once seen, long remem-

bered "Added to the value of favorable "first impressions," dealers will find this line replete with good, sound common sense "proving points," meaning "talking points" which can be "proved." All cars possess "talking points." but it takes "proving points" to satisfy a wise buyer.

DON'T DELAY. WRITE TO-DAY

We cannot take care of a great many new dealers for 1906. But a few good ones - YES,

MITCHELL MOTOR CAR COMPANY, Racine, Wis.

Mombors American Meter Car Manufacturers' Association

The average car that has an *actual* (not catalogue rating) twenty horsepower engine, will weigh about 2000 lbs., and most of them lose half of their 20 horsepower in friction before it reaches the rear wheels—this means a delivered to the rear wheels horsepower for every 200 pounds car weight.

¶In a high grade car, conscientiously put together, with bearings carefully fitted, this power loss can be reduced to about 25 per cent. This would now give a horsepower at the rear wheels for every 150 pounds weight.

¶By a new system of design the **Stevens Duryea** reduces this power loss to 10 per cent—and by this same system of design the weight is reduced to 1650 pounds. **Result**—a rear wheel's horsepower for every 92 pounds car weight.

¶ In the first car each horsepower is saddled with a 200-pound burden; in the **Stevens Duryea** this burden is lightened to 92 pounds, and you can't find the like in any other car.

¶ Now you know why we call the Stevens Duryea the Twentieth Century Hustler.

J. STEVENS ARMS & TOOL CO.
705 Main St., Chicopee Falls, Mass.

ANNOUNCEMENT

The New Model

30-35 H. P.

has arrived. Note specifications below, then inspect it and try it. Experts who know Auto-cars from A to Z will be forced to admit that in beauty, workmanship, enduring strength and every other requisite of a perfect touring car, this magnificent new Rainier is THE American Automobile.

Engine—30-35 H.P., 4-cylinder, water-cooled. Tires—Continental, 34x4.

Ignition — Sims-Bosch Magneto. break spark.

forward and one reverse.

hub, ball bearings.

Front Axle—I beam section, ball bearings.

Frame—Cold rolled pressed steel, aluminum under-bonnet covering entire engine and transmission.

Wheel Base-104 inches.

Wheels—Imperial whalebone, grade A second growth hickory.

Make and Valves—Mechanically operated, inlet and exhaust interchangeable.

Transmission-Sliding train, three speeds Carbureter-Float feed, requiring no adjust-

Rear Axle-Bevel gear drive, clutch driven Brakes-Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.

Body—Full aluminum, double side entrance.

Equipment—Two headlights, 2 side lights, 1 rear light, 1 horn.

Price, \$4,000

The 22-28 h. p. will be continued as heretofore without any changes. 4-cylinder, 98-inch wheel base, La Coste coil, French battery, Continental tires, aluminum side door body.

Price, \$3,500

Both models guaranteed free of repairs for one year. The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for October and November delivery.

HE RAINIER COMI

Broadway, cor. 50th Street

NEW YORK

Boston Agents, Morrison-Tyler Motor Co.

Good agents wanted in unassigned territory.

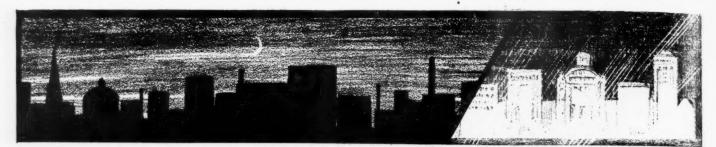


TO BE UNCRATED NEXT WEEK

The Announcement of our 1906 Models Will Be Sensational

OLDS MOTOR WORKS Lansing, Mich., U. S. A.

Member A. L. A. M.



IF YOU CAN'T BELI YOUR EYESIGHT — HOW ABOUT YOUR EARS?

ASK ANY MAN WHOSE CAR IS EQUIPPED WITH

LAMPS

ESPECIALLY IF HE FORMERLY USED SOME

OTHER KIND.

HIS ANSWER WILL
SEND YOU ON A GALLOP TO

THE NEAREST SUPPLY STORE.

THEYALL SELLATION

BADGER BRASS MFG. CO., Kenosha, Wis.

NEW YORK OFFICE, 11 WARREN STREET

Write for Booklet or ask your Supply Man



This is the car that won three cups in one day in the great Paddock Hill climbing contest; beat its nearest competitor a minute to the mile in the international "Climb to the Clouds" up Mt. Washington; carried 4 people 1050 miles in the famous Glidden Tour at a total cost of \$3.10 per passenger—without stoppage or repairs to the motor; and made a perfect score in the Los Angeles Dealers' Association run to Santa Barbara, winning its class and cup among 58 starters and 42 finishers, and tying for first place with a 24-horsepower car costing \$2500.

This car has a more graceful body than last year. It is lower in the back, longer, wider and pre-

sents a more pleasing appearance.

Burns Gasoline. Not Money.

You want speed, power and style in a motor-car. You are willing to pay what is necessary to obtain them. But no man wants to pay two or three thousand dollars for qualities obtainable for half the money.

Don't Pay It. You Don't Have To.

REO cars have been winning cups all the past season; in speeding, hill-climbing, touring—and every other test of ability and service—from cars costing twice the money to buy; and twice as much to operate and maintain.

Send for the REO book which explains why

REO 1906 Runabout 8 h. p., 1000 pounds, 2 passengers, 26 miles per hour, \$650. Convertible into a 4-passenger car by means of a folding seat to carry two extra passengers facing forward. \$675.

Has the same simple, compact, long-stroke engine as the Touring-car; the same style of raviator, carbureter, transmission, and high-grade construction and finish.

REO Motor Car Co.

Sales Department, Lansing, Mich.
R. E. OLDS, Pres. R. M. OWEN, Sales Mgr.

Agencies throughout the United States

WAYS MURILIER

A Sure Guarantee Against Colds

Especially adapted for Fall and Winter Automobiling

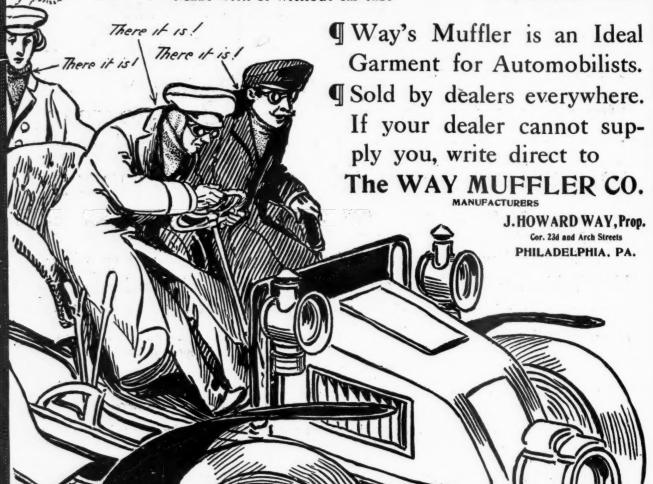
A Perfect Throat and Chest Protector

For Men, Women and Children

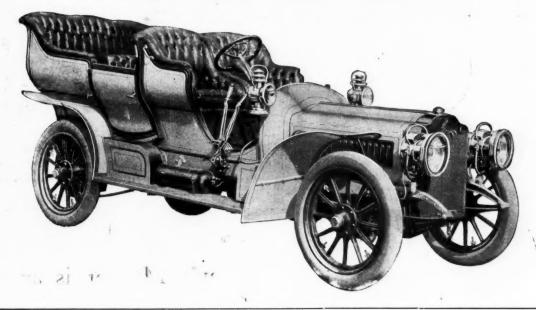


Made with or without ear-tabs





THOMAS 1906



In spite of the fact that we are completing the finest fire-proof factory in the world with a capacity of one thousand high powered automobiles per annum, it looks very much as though last year's scramble for Thomas Cars was going to be repeated.

Last year, premiums of all the way from \$150 to \$750 were refused for Thomas cars. We were likewise compelled to refuse orders for 50 per cent of our capacity.

The only sales we lost were those of a few unposted persons here and there, who couldn't see how so much value could be sold at so reasonable a price.

That idea was demolished last season and the fact that the 1906 Thomas is far costlier than the 1905 model without a change in price makes it unquestionably the greatest automobile value in the world today.

In brief what you have to consider is a car which demonstrated last year its superiority to cars costing from \$1,500 to \$4,000 more money.

A car with 50 H. P. (actual) which is quieter than it was last year; smoother than it was last year; has larger motors; is far more beautiful; far more comfortable, seating five or eight all fronting forward; with perfect clutch; perfect control; four-speed Hess-Bright Ball bearing transmission; four powerful brakes; forgings throughout; material guaranteed to be the costliest made; fifteen Hess Bright Bearings and one roller.

Analyzing this 1906 offering of power, beauty and the highest degree of construction, and bearing in mind what I have said to you about the probability of a greater demand than we can supply even with our increased capacity of 1,000 high powered automobiles per annum—do you not think it advisable for you to investigate the Thomas without delay by consulting our nearest representative?

E. R. THOMAS,

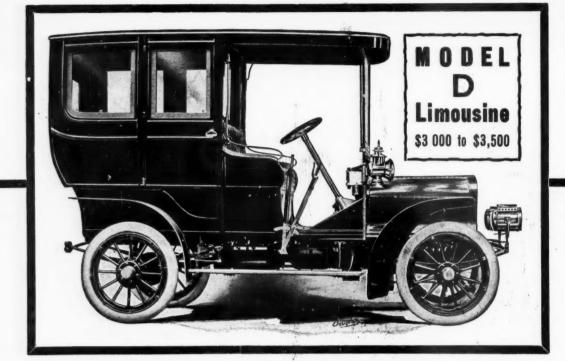
For the E. R. Thomas Co.

E. R. THOMAS MOTOR COMPANY

1417 Niagara Street

Members A. L. A. M.

BUFFALO, N. Y.



CORBINAIR-COOLED CARS

AIR-COOLING, highly desirable at all seasons, is especially advantageous when applied to cars for winter driving

SILENT AS THE PURRING OF A KITTEN

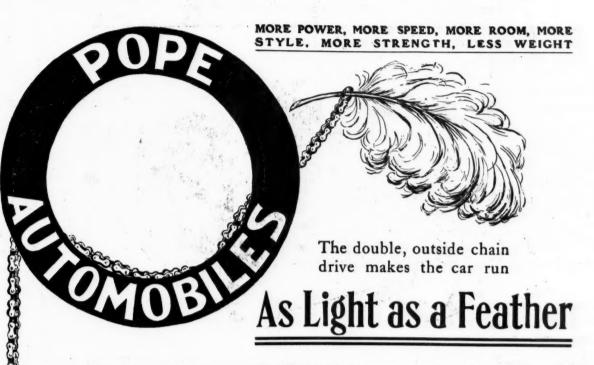
Our Catalogue tells the story of Air Cooling in particular and of Corbin Cars in general. Sent on request.

Corbin Motor Vehicle Corporation

NEW BRITAIN, CONN.

NEW YORK, 4 West Thirty-Eighth St. BOSTON, 43 Columbus Avenue

PHILADELPHIA, 629 North Broad St. CHICAGO, 1404-6 Michigan Avenue



The Pope-Toledo, Type XII, 35-40 H. P., is the product of our many years of varied and valued experience in the construction of gasoline touring cars.

The Efficiency of the Motor is not secured by mere excess of bore and stroke in the cylinders, but the entire mechanical construction, including material and finish, has been so studied that we get one horsepower for every 10 8-10 lbs. of weight and this, too, without in any degree sacrificing strength, the margin of safety in all parts being as great as heretofore.

This is not the conclusion of a philosophical problem reasoned out by a keen, mental activity, but it is an actual result achieved by mechanical skill and proved under extraordinary tests over highways and country roads.

Send for a detailed description of this wonderful car and it will convince you of all we claim. Order now for early delivery.

Price \$3.500

In the meantime, we have for immediate delivery our new Type X, 20 h. p., touring car fresh from the factory. A light, wieldy car, combining efficiency, comfort, style and durability.

Price \$2,800

Pope Motor Car Co.

A. L. A. M.

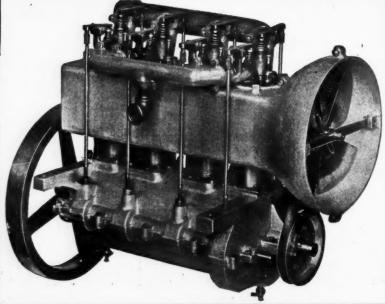
WATE FLANT

Absolutely Tested

by all kinds of Herculean Work

Positively Proved

by six months of faultless performance



Cylinders surrounded by Hood with Fan connection on outer end, blowing a

CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

Write for Descriptive Particulars

THE DETAILS

15 H. P., developed at 1500 revolutions. Bore and stroke, $3\frac{1}{2}x4$ inches.

Length of Motor over all, 29 inches.

Crank Shaft diameter, 11/4 inches.

Total bearing surface on Crank Shaft, 101/4 inches.

Bearing on Connecting Rods, 2x11/4 inches.

Bearing on Wrist Pin, 13/4 x11/4 inches.

Connecting Rods of drop forgings with phosphor bronze Crank Shaft. Base and Crank Case of Aluminum.

Width of Motor from end of arm to end of arm, 191/4 inches.

Center of Crank Shaft to bottom of Motor, 41/4 inches. Center of Crank Shaft to top of Motor, 18 inches.

Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.

Total Weight, 225 lbs.

Lubrication by Splash Feed and constant level automatic lubricator.

TREBERT GAS ENGINE CO.

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES BUILDERS OF TRANSMISSIONS AND CLUTCHES :::: LIGHT POWERED CARS REBUILT

REFERENCE: JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

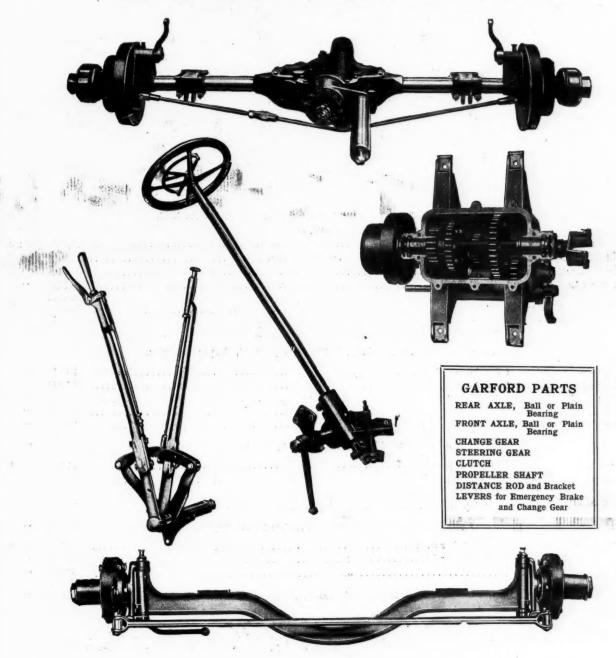
GARFORD TOURING CAR PARTS

We don't wait for customers to test our parts before ascertaining if they are suitable for high grade touring cors. The model cars our engineers operate are given such severe service that the dependability of each piece is known to us in advance. Experiments are conducted at our own expense and risk. Write for Circular No.12.

One size for cars weighing up to 2,400 lbs., and of 30 H.P. Other size for cars weighing up to 2,800 lbs., and of 50 H.P.

The Garford Company—Elyria, Ohio

SALES MANAGER-HAYDEN EAMES, AMERICAN TRUST BUILDING, CLEVELAND



Motor Age Circulation



The above cut represents Post Office Receipts for 7,130 pounds net, of issue of October 19, 1905. Each paper, including wrapper, weighed an average of 10 ounces. 7,130 pounds divided by 10 ounces equals..... We also sold, non-returnable, to Western News Co. and news stands direct..... 674 Mailed under stamps to foreign addresses..... Retained for office sales and distribution 350 Total for week of October 19...... STATEMENTS PREVIOUSLY PUBLISHED. Average weekly edition for July, 11,755—see page 38. August 24 issue.

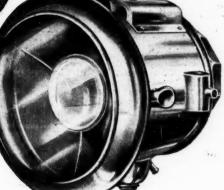
Average weekly entered for July, 11,755—see page 38, August 24 issue.		
August 17, page 42, statement for August 3	13,159	papers
August 24, page 39, statement for August 10	12,269	6.6
August 31, page 38, statement for August 17.	12,176	4.4
September 7, page 29, statement for August 24	12,271	4.4
September 14, page 42, statement for August 31	12,518	6.6
Average weekly edition for August, 12,468.	62,393	44
September 21, page 32, statement for September 7	12,220	papers
September 28, page 46, statement for September 14	13,106	6.6
October 5, page 46, statement for September 21		6.6
October 12, page 52, statement for September 28	12,532	6.4
Average weekly edition for September issues, 12,535.	50,141	**
October 19, page 50, statement for October 5	12,239	papers
October 26, page 44, statement for October 12.	12,868	66
Including above for October 19	12,522	66
Average for three issues in October, 12,543.	37,629	6.6
-		

MOTOR AGE, M. N. Van Sicklen

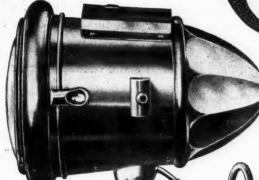
1906 LAMPS & GENERATORS-



Front View

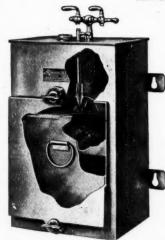


NEW LAS HEADLIGHT



Side View





(Patent applied for) THE FAMOUS ATWOOD GENERATOR

Thirty years of experience as builders of Good Lamps has enabled us to present our 1906 Line with the absolute knowledge that they are IN EVERY DETAIL THE MOST PERFECT EVER PRODUCED.

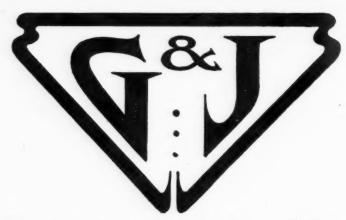
They cost a trifle more than others, but they are SURELY worth the difference. Our reputation is behind them, and that means

HIGHEST GRADE



(Design ratent applied for) NEW OIL SIDE LIGHT

Manufacturers should BY ALL MEANS see our line before contracting for 1906. SURE.



MOTOR CAR TIRES

The Most Serviceable Tires Made

- No Internal Heating. The thread fabric construction makes the tire so pliable that it changes position in service with the least possible resistance, which means that the tires are very resilient, fast and free from internal heating.
- No Pinched Tubes. The tire is fitted with a flap, which prevents the tube from coming in contact with the rim, or from getting under the edges of the case, preventing pinched tubes.
- No Creeping. The flap forms a strong frictional contact with the edges of the clinches, holding the edges firmly to the rim for its entire circumference, so that it is impossible for the tire to creep.

G&JIRE CO.

Boston

Buffalo

Cleveland

Detroit

INDIANAPOLIS

Chicago

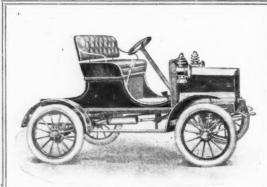
Denver

San Francisco

Just a Few Details

of our Models G and H which we could not mention in our announcement in Motor Age October 19 and 26: First a word about 2

cycle motors. In this construction all valves, cams, cam shafts and all gearings are entirely omitted as compared with 4 cycle motors. 75 per cent less working parts, 75 per cent less trouble. Our motor is as quiet as is possible to make a gasoline car. Both models, G and H, have 2 cycle, 2 cylinder vertical motors under hood in front. Beautiful body design, materials all of the very best, planetary transmission. One lever controls all speeds and brake. Model G lists at \$650, Model H lists at \$750.



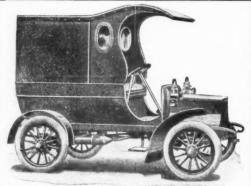
Model "G" 10 h.p. Runabout

NOTICE

We Want Agents in Every Locality

Agents who will hustle. Our line a quick seller and will remain sold. Fewer parts, fewer repairs, fully equipped.

> ADDRESS DEPT, "C"



Model "H" 10 h.p. Delivery.

Wolverine Automobile & Commercial Vehicle Co.

DUNDEE

MICHIGAN

CADILLAC CONFIDENCE

During October we have booked orders from dealers for just 1210

Cadillacs for 1906 delivery—Only a starter.

Every one of these dealers has ordered at least as many cars as he had in 1905, in some cases twice the quantity. But not one of them has even seen a sample of the cars he's bought.

Taking chances?

Not a bit. They know that Cadillacs have always been right and as the Cadillac Company has never led them astray, they have confidence that they will continue to be right. No freaks, no experiments to be tried on the public-just Cadillacs.

They know that Cadillacs are the kind that give satisfaction, the kind that sell and stay sold and don't worry them to death afterward. They know too, that most buyers know it and that the others are learn-

ing it fast.

We're taking 1906 business.

CADILLAC MOTOR CAR CO., Memoer Association Linconstructurers. DETROIT, MICH.

Michelin

Tires of the highest class.

The only stock tires that rode to victory in the Vanderbilt race without a change.

MICHELIN ROUND TREAD TIRES. MICHELIN FLAT TREAD TIRES. MICHELIN ANTI-SKID TIRES.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29TH STREET NEW YORK

Telephones: 760-761 Madison Sq.

E. D. WINANS, Gen'l Mgr

Branches in all large cities in the United States

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

The table is of cast-iron supported by a ball bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

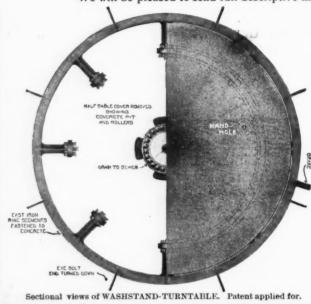
It moves easily, is practically indestructible and is absolutely fire-proof.

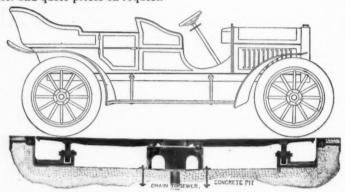
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer

through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.





LINK-BEL Machinery



KINGSTON 1906 TYPE-K-TOMAT BURI

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air

Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.

Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

OVER 30,000 KINGSTON CARBURETORS IN USE



IMPROVED FOR 1906

BYRNE, KINGSTON & CO.

KOKOMO, INDIANA, U. S. A

Are YOU a Ford Agent for 1906?

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date. There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season.

We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

Write and get in touch with us.

FORD MOTOR COMPANY :: Detroit, Michigan

Members American Motor Car Manufacturers' Association, Chicago.

Canadian Trade supplied by THE FORD MOTOR CO. OF CANADA, Ltd., Walkerville, Ont.

The Daimler Manufacturing Co.

announces that it is now ready to book orders for the

1906 American Mercedes 40-45 P. PRICE \$7,500

Through our sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company—THE DAIMLER MOTOREN GESSELSCHAFT, of Unterturkheim, near Canstatt, Germany, we produce the only authorized copy, part for part, of the

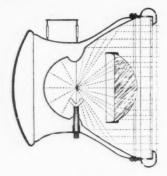
1906 Mercedes

All the shop drawings of the 1906 Mercedes, showing the latest changes and advances embodied in this celebrated car, are now in our hands, awaiting your examination. Will mail you the 1906 catalogue on request.

SAVE THE DUTY

DAIMLER MANUFACTURING COMPANY

973 Steinway Avenue, LONG ISLAND CITY, N. Y. NEW YORK CITY GARAGE, 10 West 60th Street



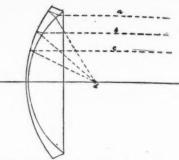
THE RELIC

A Re-Invented Relic

Theoretical Efficiency 80 per cent.

Actual Efficiency 10 per cent. Theoretical Efficiency 50 per cent.

Actual Efficiency 40 per cent.



RUSHMORE NAVY STANDARD

NO

It shows a searchlight patented eighteen years ago, made by us for many years and discarded ten years ago because of its ridiculously low efficiency compared with the Navy Standard Mangin Mirror, which was first perfected by us.

Theoretically, the "Relic" utilizes nearly every ray from the source of light. Practically, most of the rays are absorbed by the sheet copper, silver plated reflector and by the ridiculously heavy bull's-eye lens. The reflectors in the presence of burning acetylene cannot be kept bright, or even clean. Their efficiency, with the most careful hand burnishing, is never more than 50 per cent, and it drops in a few days to but 5 or 10 per cent.

We found by actual test that the carrying power of the Navy Standard Light with our short focus mirror, made only in our works, was ten times that of the "Relic," and we dropped the "Relic." That was ten years ago.

The Rushmore Mirror cannot tarnish. Its efficiency is the highest of any. When you compare "lamps" compare them as we did—in the dark—and see that the flames are the same size.

RUSHMORE DYNAMO WORKS

PLAINFIELD, NEW JERSEY

PENNSYLVANIA ROCLINCHER

There are no perfect Motor Cars, nor any perfect tires—as yet;

But if you have a car which you consider <u>almost</u> perfect, perhaps you would like a <u>tire</u> fit to associate with it.

PENNSYLVANIA RUBBER CO. JEANNETTE, PA.

THE HARTFORD DUNLOP TIRE

DR. J. B. BOUCHER, SS CHARTER OAK AVE.

Hartford, Conn. Oct. 33,

The Hartford Rubber Works Company.

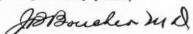
Hartford, Conn.

Gentlemen: -

You may be interested to learn that the Hartford Dunlop tires fitted to my two cylinder Knox which I have driven all season, have thus far covered a little over 3500 miles. I have had no trouble with the exception of four punctures. I am much pleased with the tires both as to their wearing qualities and the ease with which they can be removed and replaced.

I do not enjoy punctures but must admit that they are robbed of half their horror since using the Dunlop.

Very respectfully yours,





Hartford Rubber **Works Gompany**

Home Office and Factories Nos. 1 and 2. HARTFORD, CONN.

Factory No. 3, New Brunswick, N. J.

BRANCHES:

BRANCHES:
BOSTON, 492 Atlantic Ave.
NEW YORK, 88 Chambers St.
NEW YORK, 1769 Broadway.
NEW YORK, 2355 Jerome Ave.
PHILADELPHIA, 138 N. Tenth St.
BUFFALO, 686 Main St.
SAN FRANCISCO, 451 Mission St.
CLEVELAND, 77 Bank St.
DETROIT, 266 Jefferson Ave.
CHICAGO, 83 Michigan Ave.
DENVER, 1364 Broadway.
LOS ANGELES, 116 East Ninth St.

1906 MODELS Now Ready for Demonstration

All Valves Interchangeable.

Positive Lubrication by Mechanical Force Feed Oiler.

Hand Forged Crank Shaft ground to size.



Motor.

12-15 H. P. Compound

Aluminum Body.

Sliding Gear Transmission, Three Speeds Forward and Reverse.

Can be furnished with either Shaft or Double Chain Drive.

EQUIPPED WITH TOP AND HEADLIGHTS, \$1550

We should be pleased to refer anyone to many satisfied customers who are daily using Compounds Testimonials will appear from time to time in future advertisements

THE E. H. V. CO.

Middletown, Conn.

There is no greater disappointment than to operate a firstclass automobile and have it act second or third grade because of its tire equipment.



continue to maintain in first-class condition any car they are equipped to. RESULTS prove that. Send for proof.

DEPARTMENT M. A.

THE CONTINENTAL CAOUTCHOUC CO.,

EMIL GROSSMAN, Gen'l Mgr. (FACTORY, HANOVER, GERMANY)

43 Warren St., NEW YORK



Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They do what others almost do.

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others almost do.

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others - not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

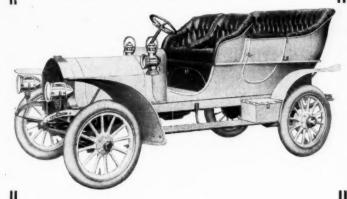
Stoddard - Dayton

Continued tests of **strength**, **power** and **speed** permit of our claiming the new 1906

Model D

Stoddard-Dayton

a wonder of automobile construction.



An open inspection of our factories shows the **best grades of material**, from steel to upholstering tacks.

In our assembling room, is shown the greatest care.

The finished product substantiates it all.

BOOKLET READY—CATALOGUE LATER



CHICAGO: McDuffee Auto Co.

NEW YORK: Stoddard-Dayton Agency, 60th and Broadway

BOSTON: Randiff Motor Car Co. MINNEAPOLIS: Haynes Auto Co. INDIANAPOLIS: Frank L. Moore

Dayton Motor Car Co.

FACTORIES

DAYTON, OHIO

Stoddard - Dayton

THE INCOMPARABLE

WHITE

THE CAR FOR SERVICE



MODEL "F" SIDE-ENTRANCE WHITE

This is the sixth model of the incomparable White steam car to be offered to the public. In our judgment, and in that of the many automobilists who have seen the car, the Model "F" leaves nothing to be desired.

There is something more than the luxurious appearance of the car, its speed and noiselessness of running, to influence your judgment in favor of our car. That "something more" is the uniform and unbroken success of White cars in all reliability and endurance contests, starting in 1901, and an unequaled record of accomplishments by a host of private owners.

WRITE FOR LITERATURE

WHITE SEWING COMPANY

CLEVELAND, OHIO

The Standard American Cooler

THE WHITLOCK COOLER

Was used on the Locomobile Racer that finished third in the Vanderbilt Cup Race. It was never touched during the race. It did its full duty. It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY.** The leading makers of automobiles have recognized this fact by adopting

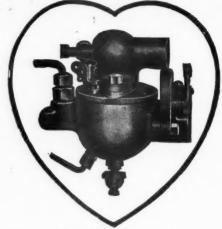
The Whitlock Coolers

continuously for the seasons of 1903, 1904, 1905 and 1906.

The Whitlock Coil Pipe Co.

Hartford ... Conn.





OF THE AUTOMOBILE

The Schebler Carbureter STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carbureter manufacturers in America cannot show this record.

Seven sizes from ½ 1 to 31.

Schebler carbureter with balance throttle to be used with a governor.

Schebler two-cycle engine carbureters.

Schebler Special for Cadillacs.
Oldsmobile carbureters.
Ford two-cylinder carbureters.
Autocar Runabout carbureters.
Franklin Automobile carbureters.
Standard sizes for all other motors.
Special fittings for attaching the
Schebler to above cars.

Agencies in all the principal cities of the world

F. H. WHEELER

Manufacturer and Sales Agent Indianapolis, Ind., U.S.A.

LIST OF AGENCIES.

P. J. Dasey ... 431 Wabash Ave., Chicago, Ill. Factory Rep. E. J. Edmond ... 44th St. and 6th Ave., New York City E. B. Belcher ... 26 Green St., Malden, Mass. Jos. Brassard ... Central Falls, Rhode Island Ellsworth Foundry & Machine Shop ... Ellsworth, Me. National Elec. Supply Co. ... Washington, D. C. Automobile Equipment Co. ... Watertown, N. Y. The Wallace Bros. Co. ... Watertown, N. Y. The Wallace Bros. Co. ... Norfolk, Va. N. Philadelphia Auto Station ... 3425 N. Broad St., Phila., Pa. Auto Supply Agency ... 3939 Olive St., St. Louis, Mo. R. P. Bayley & Co. ... New Orleans, La. Consolidated Supply Co. ... Denver, Colo. Chanslor & Lyon Motor Supply Co. ... Denver, Colo. Chanslor & Lyon Motor Supply Co. 503 Golden Gate Ave., San Francisco, Cal. Los Angeles Auto Co. ... Los Angeles, Cal. McCulloch & Boswell ... Winnipeg, Manwilson & Co. ... Ottawa, ontario, Can. Canada Cycle & Motor Co. ... Toronto Junction, Can. Turnbull & Jones ... Dunedin, N. Z. Geo. Nell & Co. ... 38 Fenchurch St., London, England.

Congratulations

From a dealer in a rough-road country on the service obtained

GOODRICH TIRES

WITH THE BAILEY TREAD

"We wish to congratulate you because of the splendid way your Goodrich-Bailey Tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use. but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, the latter seems to be a sure thing on some tires that we know of.

We are looking to 1906 Goodrich and expect to be partial to them because we believe they deserve it, if their previous reputation is any criterion to go by."—Ashville Cycle and Auto Company, Sept. 23, 1905.

THE BAILEY "WON"T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1625 Broadway Buffalo, 731 Main St. San Francisco, 392 Mission St. Boston, 161 Columbus Ave. Philadelphia, 909 Arch St.

Cleveland, 420 Superior St. Chicago, 141 Lake St. Detroit, 80 E. Congress St. Arch St. Denver, 1444 Curtis St. London, E. C., 7 Snow Hill.

The Haynes on Honors

A regular "Haynes" stock touring car outclassed the especially constructed racing monsters, in the Vanderbilt Cup Elimination Trials securing a position that entitled it to a place on the American team.

A random comparison of the cylinder capacity of the competing cars with THE HAYNES (5 inch borex6 inch stroke) is sufficient to demonstrate what a wonderful achievement this was.

EXACT DUPLICATES

of the car that outclassed and outdistanced powerful racing monsters are offered for 1906.

LIVE AGENTS

are quick to realize the advantage of handling a car like this. Get your application in early.

We are Booking Orders in Their Turn for This Car.

The Haynes Automobile Company

KOKOMO, - IND.

New York

Chicago

A RANGY LINE

JACKSONS JACKSONS

THREE MODELS

"C," "D" AND "G"

RANGE OF PRICES \$1250, \$1500, \$2500

FROM 18 TO 40 H. P.

RANGE OF WHEEL BASE 90 "-100 "-108 "

Plenty of Style, Strength and Speed

MODEL C

2 cylinders opposed, $5\frac{1}{4}$ "x5", motor under body, wheel base, 90 inches; chain drive.

Price, \$1250

MODEL D

A new model for 1906. 2 cylinders, 5¼"x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.

Price, \$1500

MODEL G

40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.

Price, \$2500

LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT.

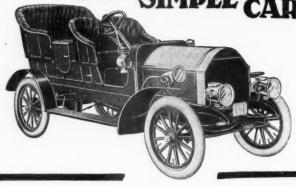
A Live Line For Live Dealers : : : : : WRITE

JACKSON AUTOMOBILE CO.

JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."

GASAUTE SIMPLE



Elegant in Finish Luxurious in Appointments Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World

—both as to construction and control, and the easiest to operate and

maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, \$5,000

Corwin Manufacturing Company Peabody, Mass., U. S. A.

Motor Cars

In two new models improved and better than ever will be ready very shortly.

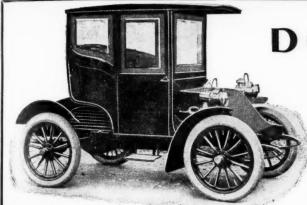
We have a surprise to offer which will make EVERYBODY

"Watch for the Round Radiator"

National Motor Vehicle Co.

1006 East 22d Street INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association, Chicago.



DOGTOR'S

THE ADAMS-FARWELL MOTOR GAR

Three Cylinder Gasoline Motor

Revolving

Air-Cooled

Operated from rear seat or from folding front seat. All windows may be lowered, making an open car.

NO WATER.

NO RADIATOR. NO FLYWHEEL. AUTOMATICALLY GOVERNED.

NO MUFFLER.

Cylinders 5 in. Bore.

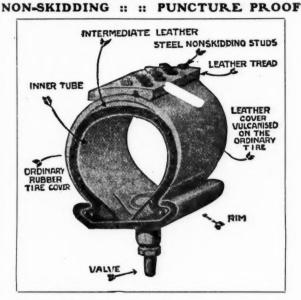
NO FAN.

Displacement 265 cu. in. 20-25 Horse Power.

= \$2,500 =

Chicago Salesroom: 1536 Michigan Ave.

THE ADAMS COMPANY DUBUQUE, IOWA, U. S. A.



A. E. GALLIEN, Manager UNITED STATES BRANCHES:

New York; 12 West 33d Street Chicago; 1461 Michigan Boulevard Boston: 20 Park Square

Philadelphia: 1120 Chestnut Street

Hill Precision Oilers

The first requisite in a mechanical oiler is efficiency. To be efficient, it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is economy.

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.

Automobiles Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. car. Yours truly,
THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY

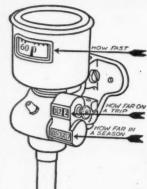
840 Austin Avenue

CHICAGO U. S. A.

REGARDING 1906 BUSINESS

As truthful a saying as ever was heard Refers to a worm and an early bird; And especially true is this of the sage, Who uses space now in the MOTOR AGE.





THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you exactly how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.

When a trip is finished, the Auto-Meter tells exactly how many miles you have gone on that trip.

When the season is over the Auto-Meter tells exactly how many miles you have covered during the season, All this is worth while. Is it not?

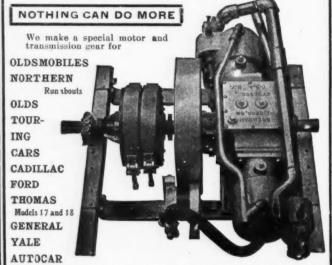
Get acquainted with the Auto-Meter. It will lead to lasting friendship.

Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass.
Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Steinway Hall, Chicago, Ill.
Southern California, G. P. Moore & Co., San Francisco, Cal.

Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Steinway Hall, Chicago, Ill.



WHITE STEAM CAR GLIDE RAMBLER CLEVELAND POPE-HARTFORD SANDUSKY RUNABOUT ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR and all standard makes of cars

BRENNAN MFG. CO. SYRAGUSE

atest European Novelties

No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on repuest.





AUTOMOBILE **IEWELRY**

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

Branchfs
Broadway and 36th St., New York 318-320 N. Broad St., Philadelphia 202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio



BROWN=LIPE GEARS

IRREVERSIBLE STEERING BEVEL AND CHAIN DRIVE DIFFERENTIAL MANY SIZES AND MODELS SLIDING GEAR TRANSMISSION

PETERSON & DRAPER, 166 Lake St., Chicago, Ill.
THOS. J. WETZEL, 11 Warren St., New York.

CHAS. E. MILLER, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202-4 Columbus Ave., Boston.
406 Erie St., Cleveland, O.
POST & LESTER Co., Hartford, Conn., Eastern Sales Agts.

t Factory Salesmen.

Sales Agent Carrying Stock.

200 South Geddes Street SYRACUSE, N. Y.

The Locomobile Company of America, Bridgeport, Conn. Member Association Licensed Automobile Manufacturers.

Keeps

Your

Car

Bright

Keeps

Your

Car Clean

Makes

01d

Cars

Look

Like

New

NEW YORK, Broadway and 76th St. PHILADELPHIA, 249 N. Broad St.

BOSTON, 15 Berkeley St. CHICAGO, 1354 Michigan Ave.



One Pound Can 10c

31/2 Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

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DEFLATED

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event.

Ask the Glidden Tourists how they like the Splitdorf Coll.

Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

MR. C. F. SPLITDORF. June 24th, 1905.

Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. PARKER.

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Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St.

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It is just what you have been looking for.

Onickly attached and detached. C-eeping and Rim Cutting entirely avoided. Made of the very best material and workmanship throughout.

Write us for full particulars.

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Self-starting from the Seat

"Matheson"

"America's Finest Motor Car" 1906 Models—40 and 60 H.P.

Our New Factory now building, in... WILKES-BARRE, PA. will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.

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THE GALE \$500

Will be a genuine sensation in 1906

Every Up and-Doing Dealer knows the value of handling A GOOD CAR at a low price. THE GALE stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

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Model 7. 28-32 h. p., \$2,000

A 16 h.p. Runabout

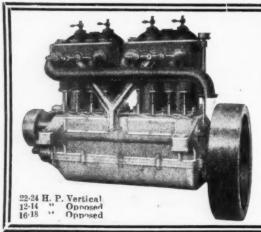


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Our Noiseless Transmission

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For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis

"BUILT LIKE A HE AUTO-ME CHRONOMETER "

ELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Gells both with absolute accuracy

The Speed Dial, six inches wide and easily read, records the speed of a car from a fraction of a mile to miles an hour and does it unerringly.

The Trip Dial records the distance traveled on a trip or for a day.

The Season Dial records the total distance covered in a season.

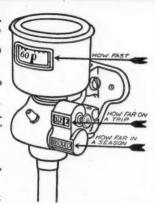
There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

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FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

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KOKUK FABRICS

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MANUFACTURED EXCLUSIVELY BY

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The cut shows the new Columbia Electric Brougham Mark LXVIII, with Lightened Construction, Pneu

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With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

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When riding or driving in your Auto use a

LEHMAN CARRIAGE and AUTOMOBILE HEATER

Good for Sleighs, too

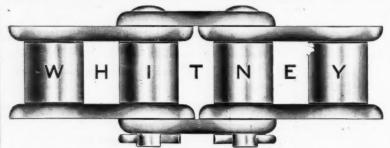


300,000 LEHMAN HEATERS are in use by leading physicians, automobilists, horsemen, farmers, etc., everywhere. They are universally known as the standard and best. They burn LEHMAN COAL at a cost of 2c for a day's heat; and from which there is no smell, smoke nor danger. Beware of imitations. Our goods have been on the market for over 20 years, and are known to be the BEST money and skilled labor can produce. Booklet telling more about them and giving prices is free for the asking to all who mention Motor Age.

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1906 Model "WHITNEY" Detachable Roller Chain—Patented



WHITNEY MFG. CO.,

Hartford, Conn.

Investigate "Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the leading American Automobile Manufacturers and have been recognized by other chain manufacturers at home and abroad. This matter of standards is certainly one of importance, and at some future date six sizes of chains for automobiles can perfectly take the place of over thirty sizes used in the past.

Our 1906 Models embody a number of improvements and they are breaking all previous records for quiet running and efficiency.

Front wheel and opposite rear wheel each raised over a foot.



Twist the car this way

When you inspect the car you think of buying, have the wheels raised in this same way. If the car doesn't meet the test as gracefully, without evidence of great strain, how much worse will it fare on rough roads with the speed up?

'A Mechanical Masterpiece"

Is the only car that not only "goes everywhere," but goes there with such freedom from jar, jolt or vibration, that it possesses a very luxury of motion. It is the only car that can be run at good speed over rough roads without ruinous strain and undue friction on all parts. Because it is the only car embodying the patented fea-

Double Three Point Suspension

Cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. Eliminates the binding, twisting strains inevitable in the rigid suspension of all other cars. Perfect alignment and efficient power transmission under all conditions. Four cylinders; air-cooled.

To any one who is prepared to buy a car that is carefully constructed and really luxurious, the Marmon speaks

for itself. Write for Booklet No. 1.

NORDYKE & MARMON COMPANY, Indianapolis, Ind. (Established 1851) Members American Motor Car Mnfrs, Association

Noiseless and Dustless'



Limousine

Investigate our claim for QUIETNESS—you will find that the Silent Northern surpasses in this respect. It is QUIETER than the finest electric.

Investigate our claim for EASY RIDING—four full elliptic springs and scientific distribution of weight which includes placing of all mechanism under the front hood, insure a freedom from vibration such as you can have no conception of until you ride in a silent Northern.

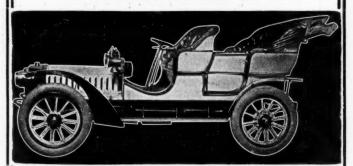
There are other features embracing our THREE POINT MOTOR support and encased mechanism which reduce the cost of maintenance to the minimum. Send for our complete Catalogue 14 which explains in detail.

NORTHERN MFG. CO. DETROIT, U.S.A.

Members Association Licensed Automobile Manufacturers.

Peter Fogarty, 142 W. 38th St., New York City Agent.

A LUXURIOUS CAR



THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price \$3,500. Full Extension Top, \$150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO. GRAND RAPIDS. ::



PORTABLE

MADE ENTIRELY OF STEEL

Protects your car and your property.

Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

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Easily erected by unskilled labor and can be moved as often as desired. By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co. 107 West Monroe St. :: Chicago, Ill.

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an



You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO.,

804 Amanda Street CLYDE, OHIO

Moline for 1906

MODEL "A"—30-35 Horse Power —\$2,500.

MODEL "C"—18-20 Horse Power \$1,750.

Both the above have four cylinder vertical motor; three speed sliding gear transmission; pressed steel frame; mechanical oiler, and double side entrance body.

MODEL "G"—16 Horse Power—\$1,000.

Double opposed motor, chain drive, mechanical oiler, and double side entrance detachable tonneau body.

...FULL PARTICULARS FURNISHED ON REQUEST ...

Moline Automobile Company
EAST MOLINE, ILL.

Why Premier Cars

Appeal to All Classes =

- To the Professional Man-because of its simplicity.
- To the Business Man—because of its readiness to go at all times.
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- To All Men—because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5,000 recorded miles—is only a trifle over one cent per mile for the car, or 1-5 to ½ cents per mile per passenger; total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

The Air Cooled Season never ends.

Side Entrance \$1,500. Runabout \$1,250 Our new [1906] Doctor's Special \$1,425 Light Truck \$1,400

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1001 George St., Indianapolis, Ind.

Members American Motor Car Manufacturers' Association, Chicago

WANTED

Manufacturing concern having recently purchased large commercial motor vehicle works, is preparing to extend operations on a greatly enlarged scale for 1906, and wants

CAPABLE REPRESENTATIVES FOR EASTERN TERRITORY

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(Must be proficient in double entry book-keeping)

EXPERIENCED CORRESPONDENCE MAN

SUIT BLE REPRESENTATIVE FC . FOREIGN TRIP

All departmental heads and prominent attachees must become financially indentified with the business.

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Always ready for use and can be used all day long any day in the year.

The Knox Patent Corrugated Pin System of air cooling is the best cooling device extant and the only one that makes

satisfactory all-the-year-round service possible.

Knox 2-cylinder cars give more speed than most 4-cylinder cars of anywhere nearly equal horse power, but cost far less for up-ke-p and running expenses.

THE KNOX LINE offers the greatest variety of commercial car types, each one a proved success, the result of years of experience in making and selling automobiles for real service.

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Largest and Oldest Manufacturers Gasoline Commercial Cars

Members A. T. A. M.

Talkin' of the Cost of Up-Keep

HE ROYAL Tourist Cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little, touring or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is put together with proper care. Money is freely spent for best materials. That's why.

That is also the reason why we were able to roll our cars over in the Vanderbilt Trials and finish among

THE ROYAL MOTOR CAR CO. CLEVELAND, OHIO

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It is easy to avoid trouble-simply in-

sist upon licensed

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Also all Auto Supply Houses.

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number. On Steatite: J. v. S. On Pillar: J. v. S.

> M. K. & Co. Pat. Aug. 31, '97.

Kellogg Multiple Gear Pump... **JOBBERS**

This is the limit o perfection. ... 1906 Catalogue will soon be ready.

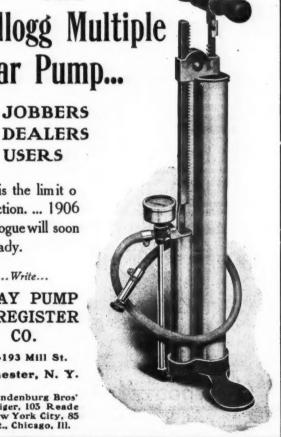
USER S

... Write ...

WRAY PUMP & REGISTER CO.

191-193 Mill St. Rochester, N. Y.

Or Brandenburg Bros & Alliger, 103 Reade St., New York City, 85 Lake St., Chicago, Ill.





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Broughams Landaulets Victorias Station Wagons

Coaches

Ambulances, etc.

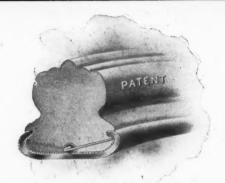
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Over One Hundred Standard Designs, One to Six Tons Capacity

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LONG ISLAND CITY, NEW YORK

Largest Builders of Electric Vehicles in the World



1906 SHAPE

WE EQUIP Pleasure Cars AS WELL AS Commercial Cars WITH



WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co. AKRON, OHIO

New York City, 1773 Broadway Chicago, 1208 Michigan Boulevard

Why Goodyear Detachable Auto Tires Won't Rim Cu

That's exactly the way the ordinary

rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the

tremendous weight of the car is not

sufficient to cause the rim to cut the tire.

HEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What

tire shall I get next time?" For a rim-cut tire is pretty near its finish.

And the chances are ten to one that if you are forced to ride around the block on an ordinary tire with ordinary rims your tire will be rim-cut before you get there. Because ordinary rims

are just like a dull jack-knife. Now if you wished to cut a strap with knife, and the strap was held

like Fig, 1 you couldn't do it, because your strength would not be great enough.

But if you take the strap like Fig. 2, with a little sawing you can cut it.



Detachable AUTO TIRE and Universal RIM

But just as soon as it gets flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the

rim against which the tire rests forms the arc of a large circle. That rim can

no more cut the tire than you could have cut the strap by using the handle of the knife in stead of the blade.

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see

more clearly what we mean.

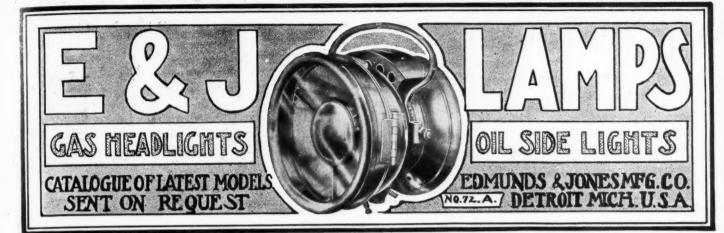
We (and others) have ridden the Goodyear Auto

Tire on Universal Rims absolutely flat for 25 miles on rough roads without the least injury to the tire. We have the evidence if you would like to see it.

This is only one reason why wise riders are specifying Goodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the rea-It is intensely interesting to Manusacturers, Dealers and Riders seeking relief from tire troubles.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, AKRON, O.

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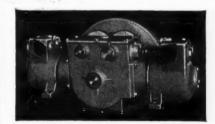
75 MILES AND OVER ON ONE CHARGE

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The Willard Storage Battery Company
Cleveland, Ohio



25 H. P. Vertical 16 H. P. Opposed
High-Class Automobile Motors



The A. Streit Machine Co.

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Price for Half-Tones and Etchings, uniformly 10 cents per square inch, with a One Dollar minimum charge. Price for Photos and Drawings on application.

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ARTILLERY WHEELS



Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio



Don't use leather belts

They cause no end of trouble with your lubricating system and fan. You should use the

TRADE MARE Steel Belt

Tough and durable, Won't slip, break or stretch,

"Lasts as Long as the Car"

Ask your Auto supply dealer for it, or send us \$3 and length of present belt and name of car. Money back if not satisfactory, Write for Circular D.

> Philadelphia Ornamental Wire Co. 628-630 filbert St., Philadelphia

THE "AMERICAN"

STORAGE BATTERY FOR IGNITION - MONITOR TYPE-







Voltage-4, 6 and 8. Capacity-20 Ampere-Hours. Prices-\$5.00, \$9.00, \$12.00 Other Styles-\$3.25 to \$32.00.

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Hall's Patent Front Drive and Steering Device Patented October 1, 1901

DRIVE

which will PULL your Automobile same as a team of horses. Also does away with Sticking in the Mud, or Skidding on Wet Streets. Write for full particulars.

For sale at BECK & CORBETT'S IRON CO. ST. LOUIS, MO.

Manufactured by AUTO FRONT DRIVE MFG. CO.

2821 Easton Avenue ST. LOUIS, MO.

STOP THAT NOISE!

NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

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MUD GUARDS HOODS AND FORGED IRONS

"The Best Kind"

HAYES MFG. CO.

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PARSONS' MANGANESE BRONZE TRANSMISSION CASE CASTING We have already furnished over 400 of these castings for the 1906 Cars of the Locomobile Company.

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GOOD COOLERS



Stolp Mfg. Co. CHICAGO

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are connected by a railroad route having finely appointed trains, day and night-Sleepers and Parlors.

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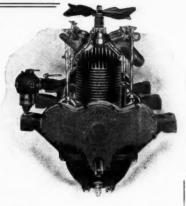
Ride this way once and you'll ride againwe think.

CHAS. H. ROCKWELL, CHICAGO FRANK J. REED, Gen. Pass. Agt.

Merkel Motors

an be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaran-teed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical, 3½33½ in., 12-14 B. H. P. Water cooled, 4 cylinder, vertical, 3½3½ in., 14-16 B. H. P. Water cooled, 4 cylinder, vertical, 4½4½ in., 20-22 B. H. P. Water cooled, 4 cylinder, vertical, 4½55 in., 35-40 B. H. P.



MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.

Non-break-able Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

No handsomer made than searchlight

Neverout?

Mirror Lens Searchlight

nor does any other give such complete satisfaction. The same distinctive beauty of design marks the new Never-

patent sefety gas producer

Makes gas only as needed and furnishes a pure, dry gas. Gives an intensely white, pen-etrating flame and is instantly lighted and extinguished.

Write for free illustrated catalogue.

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That Weak Storage Battery

Is apt to cause trouble when you least expect it. Insure yourself against all ignition troubles by installing an

APPLE AUTOMATIC SPARKER

Delivers the current with unfailing regularity. Keeps the battery charged at all ti nes. No launch,

automobile or stationary engine should be without one. We make over 80 different articles for ignition purposes.

WRITE US FOR FURTHER INFORMATION

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For \$10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for \$25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn. Cyclometers, Odometers, Tachometers, Counters and Fine Castings

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

B For general machine casting, pinions, cog wheels, propeller screws, bydraulic press and pump barrels, piston rods, screw bolts for steam cylinder. VERY TOUGH AND HARD.

Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc. VERY MARD AND DURAB: E.

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Light Mfg. & Foundry Co., POTISTOWN.



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THE IMPERIAL-LYON Automatic Lamp Adjuster

Connected to and operated by the steering

Connected () and operations of the knuckle rod.

Makes at (no nor which is visit)
Lights a turn before the body of the car swings around.

Lessens the dangers of night riding, will fit any make of car; will carry any make of lamp.

Handsomely finished in solid brass.

Let us send you des r pt ve circular and price. Write today.

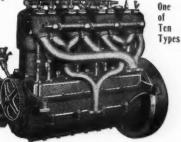
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Type B-3% x 4½ Engine

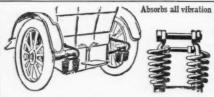


AUTOMOBILE RUNNING GEARS WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts

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Absorbs all vibration The Supplementary Spiral Spring

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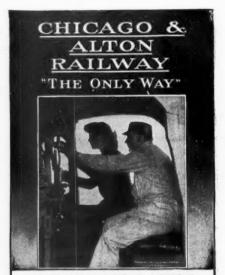
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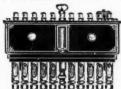
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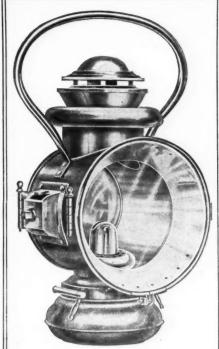
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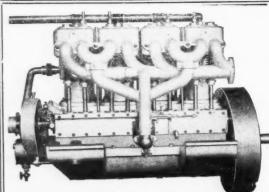
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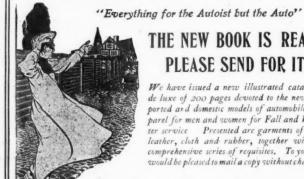
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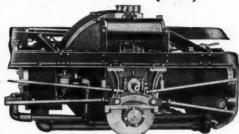
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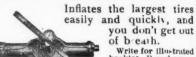
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